DRAFT CONCESSIONAIRE AGREEMENT

SELECTION OF CONCESSIONAIRE FOR "Implementation of Energy efficiency Project for Streetlights by replacement of existing conventional lamps with LED lamps along with Centralized Control & Monitoring system (CCMS) in East and Bommanahalli Zones (Partial) of BBMP in Bengaluru, Karnataka"

BETWEEN

1. BRUHAT BENGALURU MAHANAGARA PALIKE

And

2. (NAME OF SELECTED BIDDER)

DATE:

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AGREEMENT

This AGREEMENT is entered into on this the _____ day of _____, 20_____ at _____

BETWEEN

1. BRUHAT BENGALURU MAHANAGARA PALIKE , represented by its Commissioner and having its principal office at Bangalore (**hereinafter referred to as the "AUTHORITY" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns**) of One Part;

AND

2. [In case of a Sole bidder: [**** LIMITED], a company incorporated under the provisions of the Companies Act, [1956/2013], or registered with Government of India or State Government of India or State Govt. or its undertakings. or

   In case of consortium: "_____ the Lead Member of the Consortium", a company incorporated under the provisions of the Companies Act, [1956/2013],] or registered with Government of India or State Government of India or State Govt. or its undertakings and having its registered office at ****, (**hereinafter referred to as the "Concessionaire" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns and substitutes**) of the Other Part.

WHEREAS:

a. The Authority has administrative control of and responsibility of providing public street lighting under the limits of BRUHAT BENGALURU MAHANAGARA PALIKE.

b. The Authority wish to develop an energy efficient public street lighting system in the limits of BRUHAT BENGALURU MAHANAGARA PALIKE by replacement of existing conventional streetlights with energy efficient LED streetlights and installing Centralized control & Monitoring system. This will include integration of new LED and existing LED streetlights with CCMS system within an implementation period of 8 (eight) months (extendable by 2 months with Liquidated Damages) followed by operation and maintenance period of 7 (seven) years (**"Project"**) in accordance with the terms and conditions of this Agreement to be entered into.

c. BRUHAT BENGALURU MAHANAGARA PALIKE , having its registered office at N R Square, BRUHAT BENGALURU MAHANAGARA PALIKE, Bangalore - 560001, Karnataka (hereinafter referred to as Authority, which expression shall, unless it be repugnant to the context or meaning thereof, include its administrators, successors, and assigns)

d. The TIA had accordingly invited bids by its Request for Proposal ("RFP") for selection of Concessionaire for the Project and had selected _____ (the selected sole Bidder/ Consortium comprising _____ , _____ and _____ (collectively the "Consortium") with _____ as its lead member (the "Lead Member").

e. The TIA had prescribed the technical and commercial terms and conditions in the RFP and invited bids from

the Bidders for undertaking the Project.

f. After evaluation of the bids received, the Authority and / or the TIA had accepted the bid of the {selected Bidder/ Consortium} and issued Letter of Acceptance No _____ Dated _____ (Hereinafter called the "LOA") to the {selected Bidder/ Consortium} requiring, inter alia, the execution of this Agreement within 20 (twenty) days of the date of issue thereof.

g. _____ {The selected Bidder/ Consortium} has accepted the LOA and has agreed to implement the Project during the term.

h. _____ {The selected Bidder/ Consortium} has fulfilled the Conditions Precedent to execution of this Agreement as required to pursuant to the LOA (unless waived by the Authority).

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

1 Definitions and Interpretations

1.1. Definitions

The words and expressions beginning with capital letters and defined in this Agreement shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

Authority	BRUHAT BENGALURU MAHANAGARA PALIKE , represented by its Commissioner and having its principal office at N R Square, BRUHAT BENGALURU MAHANAGARA PALIKE, Bangalore - 560001, Karnataka
Affected Party	has the meaning ascribed to it in clause 17.1.1 (a)
Agreement	This agreement entered between Authority and the Concessionaire for implementing the Project.
Applicable Laws	means all laws in force and effect as on the Execution Date and which may be promulgated or brought in force and effect in India, including Karnataka, after the Execution Date, including statutes, rules, regulations, directions, bye-laws, notifications, ordinances and judgments with the force of law, any final interpretation by a court with jurisdiction over the matter in question
Arbitration Act	means the Arbitration and Conciliation Act, 1996
Assets	means all capital expenditure items that are put to use for providing the intended services under this contract. The assets for this Project include but not limited to LED lamps, Drivers, Luminaires, smart meters, providing GPRS and/or GSM based online monitoring system, computers, software, furniture and fixtures, servers, vehicles, and any other moveable and immovable items of expenditure which can be classified as assets.
Associate	means in respect of any Person, any other Person that Controls, is controlled by or is under common Control with the first mentioned Person
Authority Related Parties	means any of the following: a. an officer, servant, employee or agent of the Authority acting in that capacity; b. any contractor including any third party appointed by the Authority for any additional scope of work or sub- contractor of the Authorities of any tier and their directors, officers, servants, employees or agents acting in that capacity; or c. any person acting on behalf of the Authority.
Authority Representatives	means the Person appointed by the Authority to represent it and to carry out any of its functions and exercise powers under this Agreement
Authority's Step-In Right	has the meaning ascribed to it in clause 19.9.
Bidder	means an interested Person (sole Bidder) or Consortium, which submitted its bid to the TIA in accordance with the provisions of the RFP
Business Day	means a Day on which the Government of Karnataka and the Authority

	is open for business in Bangalore
Change in Law	means the occurrence of any of the following events subsequent to the Execution Date a. the modification, amendment, variation, alteration or repeal of any existing Applicable Law; b. the enactment of any new Applicable Law or the imposition, adoption or issuance of any new Applicable Law by any Government Authority; c. changes in the interpretation, application or enforcement of any Applicable Law or judgement by any Government Authority; d. the introduction of a requirement for the Concessionaire to obtain any new Applicable Permit; or e. the introduction of any new Tax or a change in the rate of an existing Tax. It is clarified that for the purposes of Change in Law, Taxes shall not include taxes on corporate income or income tax.
Commissioning Certificate	means the Certificate as defined in Clause 4.5.2
Companies Act	means the Companies Act, 1956 as amended, modified or re-enacted by the Companies Act, 2013 and any other enactments from time to time including any rules or regulations framed under it.
Concessionaire	the selected Bidder for implementing the Project
Concession Period	has the meaning ascribed to in the Recitals b
Concessionaire Related Parties	Shall include parties appointed and or engaged by the Concessionaire in furtherance to the performance of obligations under this Agreement.
Conditions Precedent	means, collectively, the obligations of the Parties as set out in Clauses 2.2, fulfilment of which shall be necessary for the effectiveness of this Agreement and condition precedent means any one of them
CP Waiver Notice	has the meaning ascribed to it in clause 2.3.3 of this Agreement
Confidential Information	means any part of this Agreement or any information contained in this Agreement or any material provided to any of the Parties pursuant to this Agreement, all of which information shall be deemed to be confidential, except to the extent that this Agreement otherwise requires or the Parties agree otherwise in writing
Consortium	As defined in Recital d of this Agreement
Damages	has the meaning ascribed to it in clause 1.2.1 (w) of this Agreement
Delay Liquidated Damages	has the meaning ascribed to it in clause 13.1 of this Agreement
Dispute	has the meaning ascribed to it in Clause 21.1
Effective Date	the date on which this Agreement and all of its schedules are signed by the duly empowered representatives of both Parties
EMD	has the meaning ascribed to it in RFP clause 1.2.4
EMI	Equated Monthly Instalment Fee Rs. (----------) per month
Emergency	means an event causing, or in the reasonable opinion of the Authority and the Concessionaire, threatening to cause death or serious injury to any individual, or serious disruption to the lives of a number of people or extensive damage to property or is against national interest.
Encumbrances	means mortgage, charge, pledge, lien (statutory or otherwise), assignment, assignment by way of security, hypothecation, trust,

	preference, priority, designation as loss payee under insurance contracts or other security interest securing any obligation of any Person or any other agreement or arrangement having a similar effect.
Equipment	means any equipment, including but not limited to luminaire, feeder panels, communication, control, protection, automation, cables/wires, brackets and associated equipment including equipment in the Centralized Control & Monitoring Centre such as computers, telecommunication systems etc. installed by the Concessionaire to implement the Project
Equipment Commissioning Certificate	has the meaning ascribed to in Clause 4.5.2 to be issued by Independent Chartered Engineer subsequent to which the Commissioning Certificate would be issued
Escrow Account	means the bank account opened with the Escrow Agent
Escrow Agent	Scheduled bank acting as the escrow agent for the Project
Escrow Agreement	means the agreement to be executed amongst the Escrow Agent, the Authority and the Concessionaire to open and operate the Escrow Account for the purposes of payment of the EMI to the Concessionaire, in accordance with the terms of this Agreement
Event of Default	has the meaning ascribed to it in Clause 18.1
Execution Date	means the date of execution of this Agreement
Expiry date	means the date which is the 7th anniversary of the Project COD, unless extended in accordance with the terms of this Agreement
Equipment Installation and Manpower Deployment Plan	The Concessionaire shall prepare and submit the entire installation plan for each of the wards with respect to LEDs, setting up of centralized control monitoring system, skilled manpower, vehicles, and time duration for replacement, duration of operations in the day or night, inventory, procurement and overall mobilization plan during the Condition Precedent period
Financial year	means a year commencing on 1st April of any calendar year and ending on 31st March of the following calendar year or as amended by the Government
Force Majeure	Event has the meaning ascribed to it in Article 17
Good Industry Practice	means the exercise of that degree of skill, diligence and prudence and those practices, methods, specifications and standards of equipment, safety and performance, as may change from time to time and which are reasonably and ordinarily expected to be used by a skilled and experienced contractor or operator engaged in installation, management, operation and maintenance of facilities, equipment or systems of the type and size similar to the Project
Independent Chartered Engineer	means the Person appointed by the Authority to act as the independent chartered engineer for the Project in accordance with Article 6.
Key Performance Indicator	has the meaning ascribed to it in Schedule-5 of this Agreement
Lead Member	has the meaning ascribed to it in recital d of Agreement
Liquidated Damages	has the meaning ascribed to it in Article 13 of this Agreement
Luminaire	means a complete lighting unit comprising of one or more lamps, together with its housing and appurtenances and parts designed to distribute the light, to position and protect the lamps and to connect the lamps to power supply

Payment Statement	has the meaning ascribed to it in Annex-IV of this Agreement
Performance Liquidated Damages	has the meaning ascribed to it in clause 13.2.1 of this Agreement
Performance Security	has the meaning ascribed to it in Article 11 of this Agreement
Preliminary Notice	has the meaning ascribed to it in clause 19.2 of this Agreement
Project	means developing an energy efficient public lighting system in BRUHAT BENGALURU MAHANAGARA PALIKE limits
Project COD	Project Commercial Operation Date shall mean the date on which Commissioning Certificate is issued to the Concessionaire as defined in clause 4.5.3
Right	has the meaning ascribed to it in clause 3.12.1 of this Agreement
Scheduled Bank	means a bank as defined under section 2(e) of the Reserve Bank of India Act, 1934
Tax	means any Indian taxes including excise duties, customs duties, local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, materials, equipment and services incorporated in and forming part of the Project charged, levied or imposed by any Authority Instrumentality, but excluding any interest, penalties, goods and service tax, and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income
Tender Inviting Authority	BRUHAT BENGALURU MAHANAGARA PALIKE , represented by its Commissioner and having its principal office at Bangalore which expression shall, unless repugnant to the context or meaning thereof, include its administrators and assigns
Term	As defined under clause 3.15 of this Agreement
Termination Date	means the date on which the Termination occurs which shall be the date on which Termination Notice (as per clause 19.3) has been delivered or deemed to have been delivered by a Party issuing the same to the other Party in accordance with the provisions of this Agreement
Termination Notice	means a communication in writing by a Party to the other Party regarding Termination in accordance with the applicable provisions of this Agreement
Threshold Limit	Shall have the meaning ascribed to in clause 15.1.3 of this Agreement
Transfer Date	means the date of transfer of Project facilities by the Concessionaire to Authority on completion of concession period or on Termination Date
Vesting Certificate	has the meaning ascribed to it in Clause 23.4
Willful Default	means a deliberate or conscious breach of this Agreement by any of the Parties which has a material adverse effect on the other Party

1.2. Interpretation

1.2.1. In this Agreement, unless the context otherwise requires,

a. references to any legislation or any provision thereof shall include amendment or re- enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;

b. references to laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;

c. references to a "person" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;

d. the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;

e. the words "include" and "including" are to be construed without limitation and shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases;

f. references to "construction" or "building" include, unless the context otherwise requires, investigation, design, developing, engineering, procurement, delivery, transportation, installation, processing, fabrication, testing, commissioning and other activities incidental to the construction, and "construct" or "build" shall be construed accordingly;

g. references to "development" include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, upgradation and other activities incidental thereto, and "develop" shall be construed accordingly;

h. any reference to any period of time shall mean a reference to that according to Indian Standard Time;

i. any reference to day shall mean a reference to a calendar day;

j. references to a "business day" shall be construed as a reference to a day (other than a Sunday) on which banks in Bangalore are generally open for business;

k. any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;

l. references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;

m. any reference to any period commencing "from" a specified day or date and "till" or "until" a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;

n. the words importing singular shall include plural and vice versa;

o. references to any gender shall include the other and the neutral gender;

p. "lakh" means a hundred thousand (100,000) and "crore" means ten million (10,000,000);

q. "indebtedness" shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;

r. references to the "winding-up", "dissolution", "insolvency", or "reorganization" of a company shall be

construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company is incorporated or any jurisdiction in which such company carries on business including the seeking of liquidation, winding-up, reorganization, dissolution, arrangement, protection or relief of debtors; save and except as otherwise provided in this Agreement, any reference, at any time, to

s. any agreement, deed, instrument, license or document of any description shall be construed as reference to that agreement, deed, instrument, license or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Sub-clause shall not operate so as to increase liabilities or obligations of the Authority hereunder or pursuant hereto in any manner whatsoever;

t. any agreement, consent, approval, authorization, notice, communication, information or report required under or pursuant to this Agreement from or by any Party or the Independent Chartered Engineer shall be valid and effective only if it is in writing under the hand of a duly authorized representative of such Party or the Independent Chartered Engineer, as the case may be, in this behalf and not otherwise;

u. the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

v. references to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Agreement, and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Agreement or of the Schedule in which such reference appears;

w. the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "Damages"); and

x. time shall be of the essence in the performance of the Parties" respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence.

1.2.2. Unless expressly provided otherwise in this Agreement, any documentation required to be provided or furnished by the selected Bidder to the Authority and/or the Independent Chartered Engineer shall be provided free of cost.

1.3. Measurements and arithmetic conventions

1.3.1. All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4. Payment in Rupees

1.4.1. All payments under this Agreement shall be made in Indian rupees.

1.5. Approval

1.5.1. Neither giving of any approval, consent, examination, acknowledgement, knowledge of the terms of any agreement or document nor the review of any document or course of action by or on behalf of the Authority, nor the failure of the same, shall unless expressly stated in this Agreement, relieve the Concessionaire of

any of its obligations under it or of any duty which it may have under this Agreement to ensure the correctness, accuracy or suitability of the matter or thing which is the subject of the approval, consent, examination, acknowledgement or knowledge.

2 Conditions Precedent

2.1. Effectiveness

2.1.1. Clauses 1 (Definitions and Interpretations), 2 (Conditions Precedent), 3 (Scope of the Project, Grant of Exclusive Right and Term), 6 (Independent Chartered Engineer), 11 (Performance Security), 14 (Change in Ownership), 15 (Change in Law), 16 (Indemnity and Insurance), 17 (Force Majeure), 21 (Dispute Resolution), 22 (Representations and Warranties) and 24(Miscellaneous Provisions) and any related Schedules and Annexures shall come into force and effect on the Execution Date and continue until such time as this Agreement expires or is terminated in accordance with its terms. The other provisions of this Agreement and related Schedules shall come into full force and effect and be binding on the Parties on and from the Effective Date and continue until such time as this Agreement expires or is terminated in accordance with its terms.

2.2. Conditions Precedent

2.2.1. Time period for satisfaction of Conditions Precedent:

- Unless a specific time period is provided for the satisfaction of a particular Condition Precedent, each Party shall satisfy or procure to the satisfaction of the Conditions Precedent for which it is responsible within 30 Days of the Execution Date.

- The Parties shall notify each other, together with supporting documentation, where relevant, of the satisfaction of those Conditions Precedent for which they are responsible, promptly and, in any event, no later than 5 Days after the date of satisfaction of each such Condition Precedent.

2.2.2. Concessionaire and Authority's Conditions Precedent:

The Concessionaire and the Authority shall satisfy the following Conditions Precedent, if not already satisfied on or before the Execution Date:

i. appoint a Scheduled Bank as the Escrow Agent for the Project (Escrow Agent);
ii. execute the Escrow Agreement with the Escrow Agent, inter-alia, on the terms and conditions set out in the form of the Escrow Agreement at Annex 1; and
iii. The Concessionaire and Authority shall conduct live demonstration with proposed LED streetlights (6-8 LED Luminaires of each type of Luminaire) with proposed CCMS panel as per the technical specifications in the schedule-3 which are to be installed during Project execution. This demonstration shall be conducted in the presence of BBMP, BESCOM officials and Independent Chartered Engineer (ICE). The Concessionaire will not be paid any charges for live demonstration. The demonstration shall be conducted on different category of roads in the limits of BRUHAT BENGALURU MAHANAGARA PALIKE. Demonstration will be done for

each type of proposed LED Street light which are to be installed during the Project. During demonstration the following parameters are to be determined.

a. Electrical parameters like voltage, power factor, harmonics etc. of the fixture in the designated area.
b. Lux output at road level as per specified methodology of National Lighting Code (NLC).
c. Energy consumption of LED demonstrated.

iv. It should be made sure that the lux level on the roads is according to Authority/BBMP required lux levels for various categories of roads as specified in Schedule-3.

2.2.3. Authority's Conditions Precedent:

The Authority shall satisfy the following Conditions Precedent within 30 Days of the Execution Date:

i. appoint an appropriately qualified Person / company as the Independent Chartered Engineer. The indicative terms of reference for appointment of the Independent Chartered Engineer are set out in Schedule 4. These terms of reference may be modified by the Authority, at any time after the Execution Date.
ii. provide an enclosed space measuring at least 10 square meters for the Concessionaire to set up its office, call center and control room, and separately a 2seater room for Independent Chartered Engineer;
iii. appoint and notify the other Parties of the name of the Authority Representative; and
iv. obtain all necessary permits and consents, from the relevant Government Authorities to grant exclusive rights to the Concessionaire in accordance with Clause 4.2.
v. Authority shall provide the Concessionaire with a letter duly executed granting the Concessionaire access to the existing lighting facilities/infrastructure.
vi. Finalize and approve within 10 days the "Equipment Installation and Manpower Deployment Plan" submitted by PPP Concessionaire, certified by ICE.
vii. Upon receipt of the Performance Security from the Concessionaire the TIA shall release the Bid Security (EMD) within 30 days of receipt of Performance Security.

2.2.4. Concessionaire's Conditions Precedent:

The Concessionaire shall satisfy the following Conditions Precedent, if not already satisfied on or before the Execution Date:

i. shall submit the Performance Security to Authority, in the form of Bank Guarantee as per the format within 20 days of Receipt of Letter of Acceptance.
ii. Submit the "Equipment Installation and Manpower Deployment Plan" within 20 days from the day of receipt of Letter of Acceptance.
iii. obtain and provide the Authority with copies of all relevant Applicable Permits required for implementation of the Project, other than the permits to be obtained by the Authority. If such Applicable Permits are subject to conditions then all such conditions shall have been satisfied in full, unless such conditions are required to be fulfilled by the Authority;
iv. appoint and notify the other Parties of the name of the Concessionaire's Representative; and
v. enter into a legally binding agreement appointing [Third Party Entity/Associate] as the supply contractor to supply Luminaire for the Project.]
vi. provide a certified true copy of a board resolution authorizing the execution of this Agreement by the Concessionaire;

vii. provide certificates from its authorized signatory with details of its shareholding pattern;

viii. procure and provide confirmations that:

a. it shall at all times comply with the provisions of clause 14 in respect of their shareholding in the Concessionaire; and

b. it is duly organized and validly existing under the laws of the jurisdiction of its incorporation and has requested the Authority to enter into this Agreement with the Concessionaire in accordance with the terms set out herein;

2.3. Consequences of failure to satisfy Conditions Precedent

2.3.1. If the Concessionaire fails to satisfy any of the Conditions Precedent that it is responsible for under clause 2.2.4 and fails to take necessary actions to fulfil the Conditions Precedent under clause 2.2.2 within the prescribed time period, unless waived in accordance with Clause 2.3.3, the Authority shall be entitled to terminate this Agreement by issuing 30 Days' notice to the Concessionaire and forfeit the Performance Bank Guarantee.

2.3.2. If the Authority fails to satisfy any of the Conditions Precedent that it is responsible for under Clause 2.2.3 and fails to take necessary actions to fulfil the Conditions Precedent under Clause 2.2.2 within the prescribed time period, unless waived by the Concessionaire in accordance with Clause 2.3.3, the Concessionaire shall be entitled to terminate this Agreement by issuing 30 Days' notice to the Authority. If the Agreement is terminated in accordance with this Clause, then the Authority shall return the Performance Bank Guarantee to the Concessionaire within 7 (seven) Days following the end of such 30 Days period.

2.3.3. A Party may, in its discretion and subject to Applicable Laws, either waive or extend the time period for the fulfilment of any or all of the Conditions Precedent to be fulfilled by another Party by issuing a notice to the other Parties prior to expiry of the prescribed time period for fulfilment of Conditions Precedent by such other Parties **(CP Waiver Notice)**, stating that:

a. the Condition Precedent is being waived; or

b. the number of Days by which the time period for fulfilment of the Condition Precedent in question is being extended, as the case may be.

2.3.4. If a Party fails to perform a Condition Precedent within the extended period stated in a CP Waiver Notice, the other Parties shall be entitled to terminate this Agreement forthwith by issuing a notice to such Party.

2.3.5. Upon termination of this Agreement pursuant to clause 2.3.1 and 2.3.2, the Concessionaire shall not be entitled to receive any payment or compensation from the Authority under this Agreement or otherwise.

3. Scope of the Project, Grant of Exclusive Right and Term

3.1. Scope of Work

3.1.1. The Concessionaire shall be solely and exclusively responsible for Implementation of Energy Efficiency Project for street lighting system by replacement of existing conventional streetlights with energy efficient LED streetlights and installing Centralized control & Monitoring system. This will include integration of new LED and existing LED streetlights with CCMS system within an implementation period of 8 months (extendable by additional 2 Months with Liquidated Damages) along with Operation and Maintenance for a period of 7 years after the project Commercial Operation Date (including original or extended implementation period) through PPP for undertaking the following:

3.1.2. Replacement of existing conventional luminaires identified as per the RFP (within the limits of BRUHAT BENGALURU MAHANAGARA PALIKE) with LED Streetlights including integration of existing LED streetlights with related accessories and installation of Centralized Control & Monitoring System (CCMS):

A. Planning and Procurement:

i. The Concessionaire shall prepare and submit **"Equipment Installation and manpower deployment Plan (EIP)"** as per the Technical Specifications within the Conditions Precedent period i.e. 20 days from receipt of LoA (Letter of Acceptance). The Equipment Installation and Manpower Deployment Plan shall comprise the following:

a. Shall include replacement of streetlights by LED streetlights plan as per ward wise priority given by Authority in the Table-7.
b. Shall submit the number of vehicles, manpower deployment details, and representative stock details in the plan as per format in Table-8.
c. Shall undertake diagnostic study of GIS based street light inventory provided by the TIA and finalize the following:

i. Ward wise route map along with daily schedule for replacement for streetlights.

ii. Prepare a list of fixtures and fittings required for each identified pole.

iii. Ensure co-ordination with all stakeholders such as BESCOM, Authority, other utility bodies/ agencies wherever required to ensure smooth implementation

iv. Shall visit all the existing streetlight control point where meters are installed and indicate the action plan for installation on new set of static smart meters and other fixtures along with communicable equipment's (GSM/GRPS). Before initiating action on procurement, installation, testing etc. Concessionaire has to establish necessary co-ordination with BESCOM and obtain clearances / approvals, as the regulatory compliance to GRID code, supply code, distribution code etc. are mandatory. Regarding smart meters, the Concessionaire has to get the GTP (Guaranteed Technical Parameters) from BESCOM, sample test the static smart meters before installation.

v. The plan for handing over the removed energy meters shall be indicated based on the discussion with BESCOM and Authority. Removing energy meters should be done in the presence of BESCOM staff.

vi. Shall also indicate the warehouse where the released existing streetlights, energy meters, and other components are stored.

vii. Shall indicate the procurement plan of LED street lighting fixtures along with hardware and software.

viii. Shall also indicate the warehouse where the new street lighting equipment's/ luminaries, vehicles, inventory would be stored for installation, operation and maintenance.

ix. Shall ensure that each street light pole has all the electrical fixtures such as brackets and clamps, electrical cable and wiring, other supporting equipment's.

x. Shall indicate the plan for marking of pole numbering and geotagging for each LED luminaire and CCMS installed in service area of Authority and switching point details. However, this should be done without damaging the infrastructure of Authority /BESCOM.

xi. Shall indicate the installation of CCMS plan for the entire project duration. The CCMS system should be able to provide an open API to integrate with the command and control Centre (CCC) solution might come whenever applicable so that the data feeds from Smart energy meter could be fed to CCC solution / similar possible upcoming solutions in real-time for monitoring on a unified console.

xii. Shall consider and include all the accessories required to make smart LED street lighting solution fully functional.

The contents of the Equipment Installation and Manpower Deployment Plan shall not be limited to the action plan indicated above.

xiii. The Concessionaire has to adhere to the Technical Specifications as specified in Technical Specifications section for different type of street lighting equipment.

xiv. Before starting the installations, it is the responsibility of the Concessionaire to ensure that only those poles forming part of this Project or lamps which are part of this Project are taken up for installations which belong to Authority. Poles outside such jurisdiction are not supposed to be taken up. Also, any gap in the lighting infrastructure shall be brought to the notice of the authority and authority shall take necessary measures to rectify the same.

xv. Authority holds responsibility If damage occurs to the parts of high mast like, motor, winch, ropes, carriage during the implementation period of Project. Authority will rectify the issues if any from the existing contractor before termination of the contract

B. Replacement and Installation – Implementation:

i. Shall replace the conventional street lighting system with the Proposed LED street lighting system as per Table-2 and Table-9 by adopting scientific and modern street lighting practices, including real-time condition monitoring, predictive repair/replacement of fixtures, setting up centralized control and monitoring system.

ii. LED lamps include complete street light fixtures, new brackets, clamps, bolt & nuts, insulation tapes, connectors, wires, providing suitable capacity of MCB to control group of streetlights whenever required for replacement.

iii. The existing energy meters of Authority shall have to be replaced by smart energy meters. While replacement, the Concessionaire shall in co-ordination with BESCOM / officials of the Authority undertake the replacement. The old meters shall have to be handed over to BESCOM with an inventory listing. The Concessionaire shall comply with the BESCOM`s standards / specifications and procedures for replacement of old energy meters by smart meters.

iv. The smart energy meters shall be compatible with the centralized control & monitoring system (CCMS).

v. The concessioner should set up the control room at corporation office and he will share the link to access the dashboard on designated screen which will be connected through web.

vi. Apart from the 79,451 lights and 7811 switch points as specified above (Including empty pole lights), there already exist 50987 LED lights with the Authority. Concessionaire can replace existing LED street lights, subject to maintaining the authority required Lux levels for a particular road category during the project term, and connect with the centralized control & monitoring system to control and monitor these 50987 streetlights (along with 79,451 streetlights). The responsibility of operation and maintenance of these 50987 LED street lights also lies with Concessionaire and key performance indicators shall be applicable.

vii. The CCMS solution needs to be integrated with the central command centre of Smart city /BBMP.. The concessionaire should work with LSI & MSI to integrate CCMS application with the existing Dashboard/ ICOP platform if any

3.2. Undertake comprehensive operation and maintenance of street lighting network for Contract Period (7 years):

i. The LEDs should not flicker during its normal operating duration at the specified parameters/ ranges.

ii. A detailed description of activities to be undertaken and services to be provided by the Concessionaire as part of the Project is provided in the Agreement.

iii. During the implementation phase, Concessionaire has to maintain the LED lights installed by them under particular switching point/wards/zone/packages and authority (through existing O&M contractor) will ensure the maintenance of the remaining lights. Authority will terminate the existing O&M contract after the completion of packages/zones. EMI / Maintenance amount will not be paid to the concessionaire during this transition phase (EMI will be paid only after project COD).

iv. Upon completion of street lighting work as directed by the Authority, 12-days testing period will start to check the adequacy of the installed LED street lighting system by the “Independent Chartered Engineer” as prescribed in the draft concession Agreement. Subsequent to acceptance of successful completion and testing of the installed LED streetlights, smart meters and after assessing the fully functional Centrally Control & Monitoring System (CCMS), the “Independent Chartered Engineer” and the Authority shall issue the completion certificate to Concessionaire. The operations and maintenance period shall commence from 1st day of the following month from the date of issue of completion certificate. No O&M charges will be paid to the concessionaire until project COD is achieved irrespective of completion of any wards/switch point during the project execution phase.

v. The Concessionaire has to prepare switching point and energy meter-based inventory post replacement and

shall conduct GIS/ GPS mapping of street lighting switching points/feeder panels and rationalize the coverage area under the switching points.

vi. **Service Wire:** The Concessionaire has to install cable/wires (each for phase and neutral) of required length for connection of luminaire to overhead conductor/ power supply cable. The Cables/ Wires should be of at least 2.5 sq.mm, PVC insulated multi-core flexible cable. The materials used should be as per the specifications of BESCOM. No extra charge will be payable to the Concessionaire for this work. Installing/replacing UG power cable, overhead conductors, poles are under the scope of the authority.

vii. The Concessionaire must take adequate care, by using black cotton tape or better-quality tape for connection of wires, to avoid short circuiting of connections especially during monsoon season between luminaire wire and overhead network of BESCOM.

viii. **Surge protection:** The Concessionaire will provide surge protection arrangement to protect the luminaire from switching surges which are expected/ prevalent in street light supply networks. No claim for failure of luminaires, on account of voltage surges or any other transients, will be considered. Further Concessionaire should arrange for additional surge protector along with inbuilt surge protector of LED Street light to ensure the protection against voltage surges.

ix. In case of voltage surges due to lightning, it is expected that lights, in the affected circuit, will fail in a group and not in an isolated manner. Hence, any such failure of lights in a group on account of lightning surges, may be reported to the Authority, along with circumstantial evidence preferably within 24 hours of such occurrence, for the purpose of damage claim by the Concessionaire from the insurance company. The responsibility for submission of supporting documentation rests with the Concessionaire.

x. **Earthing:** The provisions of IS-3043, may be referred to in general and to Clause no. 21.3, 21.4 and 32.5 of the said IS Specifications in particular. The Concessionaire may carry out earth resistance measurement, during the initial commissioning phase and subsequently on yearly basis or as may be felt necessary for reliable operation of the light luminaires. No claim for failure of luminaires will be entertained on account of earthing issues.

Earthing issues found by the Concessionaire has to be brought to the notice of Authority for rectification during implementation of the Project.

During O & M phase, any problems noticed pertaining to earthing; the Concessionaire shall rectify the problem at his cost.

xi. The Concessionaire has to intimate Authority about any cases of power theft or unauthorized connection of load from the street lighting network on priority basis. Authority will be responsible for taking all the corrective measures required and may not penalize the Concessionaire for such theft if it is established that such theft is no due to his inefficiencies.

xii. Releasing of the existing sodium vapor/ metal halide/ induction/ tube light / CFL, other bulbs fixtures including brackets, and other accessories the lamps safely shall be the responsibility of the Concessionaire. The Concessionaire shall make arrangement for transportation and storage of such lamps. However, Concessionaire shall assess the value of conventional bulbs that are to be replaced and factor as credit available to him. The Concessionaire shall have to consider the buy-back value of the dismantled luminaires

while quoting the lowest EMI.

xiii. During maintenance period, in case any street light is not functioning or defective, the Concessionaire will replace or repair the same within 24 hours of receiving the complaint, except for the reasons beyond the control of the Concessionaire which shall be brought to the notice of Engineer-in-charge. In case the issue is not resolved within 24 hours then a penalty equivalent to Ten (10) times of the monetized value of energy consumption by streetlight for non-burning duration beyond 24 hours shall be levied.

Penalty = 10 x (monetized value of energy consumption by non-functioning streetlight for non-burning duration beyond 24 hours)

xiv. Arrangement of equipment and machineries including hydraulic ladders or sky lifts which are required for Project implementation and operation and maintenance. Authority can only provide authorization, necessary clearance and permission if required.

xv. The Concessionaire shall maintain a call center to attend complaints received by phone, Sahaya/Janahitha-MRC, email, SMS, etc.

xvi. The Concessionaire shall maintain a stock of min. 2% of installed LEDs of each type for smooth operation of maintenance activities.

xvii. Ensure compliance with all environment and safety standards including compliance to E-Waste (Management) Rules 2016 and E- Waste (Management) Amendment Rules, 2018 for disposal of E-Waste and fulfill all statutory obligations in respect of deputed staff (if any) at its own cost for full Project duration.

xviii. In relation to the streetlights Technical Specification, set out in this document, the Authority shall, on a monthly basis, make payments to the Concessionaire in consideration of the Concessionaire fulfilling its obligations and key performance indicators (KPI) under the Agreement.

xix. The Authority shall make actual payment against invoice to the Concessionaire, within such time period duly considering the compliance to various performance parameters as set out in the Agreement.

xx. All payments on account of EMI fee will be deposited by the Authority in an escrow account, to be maintained during the term of the Agreement.

xxi. Handing over of fully functional public street lighting system and CCMS to the Authority at the end of Project tenure.

xxii. The Chief Commissioner, BRUHAT BENGALURU MAHANAGARA PALIKE shall remain the principal Authority of the municipal employees working for the street lighting department. Such employees may or may not, at the Concessionaire's sole discretion, be seconded to the Concessionaire for a specific duration and under terms and conditions to be agreed upon between the parties. The Concessionaire has no obligation to employ directly or indirectly any municipal employees.

xxiii. The Concessionaire has to be proactive in monitoring street lighting system regularly and performing preventive maintenance with periodical maintenance schedule with a designated ladder mounted vehicle and staff for every zone/ package and not relying solely on complaint management system.

xxiv. All complaints lodged in the system have to be resolved within 24 hours of lodging of complaint. For example, if the complaint is lodged on 16th May at 10 PM then the complaint has to be resolved by 17th May 10 PM. In certain cases, Concessionaire has to resolve the complaints immediately as per the instruction of Engineer In-Charge.

xxv. The Concessionaire shall ensure the availability of at least 20 numbers of ladder mounted jeep/ hydraulic vehicle/ any relevant vehicle (suitable to reach up to 10m height) along the required equipment for every zone/ package formed as per Corporation for O&M purpose. The vehicles used for O&M should have valid registration documents and be fixed with GPS.

xxvi. The Concessionaire to ensure that no work is held up due to non-availability of ladders, etc., otherwise the Concessionaire will be held responsible for such delays

xxvii. In case normal vehicle is unable to access the light point, the Concessionaire will be required to make necessary arrangements for facilitating street lighting installation and maintenance at such locations.

- The Concessionaire has to ensure that drivers of ladder vehicles must possess valid driving license, vehicle registration documents, insurance, pollution under control certificate etc. at all times during the Contract Period.
- The Concessionaire shall register a complaint with the BESCOM and also undertake required O&M in case of overhead mix network, snapping of conductors, phase-to-phase short circuit phenomenon and Authority shall coordinate with BESCOM if required.
- Trimming of trees: If the branches of tree are obstructing the light flow or O&M, the Concessionaire must trim such branches and provide O&M in such instances with prior permission from concerned department and Authority. The concessionaire will clear the debris / sloid waste generated during tree trimming process within 24 hours of the work execution on the site.
- Concessionaire holds responsibility If damage occurs to the parts of high mast like, motor, winch, ropes, carriage during the Period of Project. Concessionaire must regularly lubricate moving parts of high mast to avoid failure/damage of such parts.
- If any damages occur to poles /fixtures/ CCMS panel boxes due to accidents, catastrophe events, Concessionaire shall immediately proceed to location and clear the location and disconnect the damaged/broken parts from live parts ensure electrical safety of public. Further Concessionaire shall assist Authority to carry damaged/ broken parts to Corporation premises / concessionaire's godown whichever is applicable.
- Concessionaire must regularly conduct inspections in the evening to ensure all streetlights are in ON condition also must ensure no tapings is drawn from the circuit for the purpose of decorative/serial/flood lights by public. However, if such tapings are found, Concessionaire shall remove such tapings with prior permission of Authority.
- If the Authority intends to arrange decorative/serial/flood lights during festival time, the Authority must get approval for such temporary arrangements from BESCOM, also such temporary loads shall not be connected to street light circuits which will impact on guaranteed energy savings and health of the

circuit.

- Concessionaire must address streetlights complaints on priority instructed by Authority.

xxviii. If there exist a situation where a luminaire or a part of it/CCMS/any other component has to be replaced and the corresponding manufacturer is unable to supply the same for any reason, then the PPP Concessionaire shall arrange for an alternative and ensure that the O&M shall not get affected.

3.3. Reporting

i. The Concessionaire shall ensure proper recording of the dismantled conventional luminaires and report that to Authority on weekly basis.

ii. The Concessionaire shall submit the report of replaced lights and meters as per approved Equipment Installation and Manpower Deployment Plan to the Authority and ICE on a weekly basis. Further, the same must be shared with the Authority on 25th of every month so that the existing O&M of such replaced streetlights will be withdrawn from the scope of existing O&M of the contractor and transferred to the O&M scope of Concessionaire, from the commencement of succeeding month.

iii. The Concessionaire should submit ward wise weekly report on quantum of reduction of sanctioned load upon the replacement of Streetlights to LED streetlights.

iv. The Concessionaire will be required to submit, at the start of every month, detailed CCMS report capturing energy consumption at each CCMS panel, hours of operation, details of events like phase failure, non-operational light points, etc. to Authority after validation and certification by ICE.

3.4. Ownership

i. Authority shall at all times during the Contract Period remain the owner of the street lighting infrastructure under its jurisdiction.

ii. Apart from 79,451 lights and 7811 switch points as specified above(including empty pole lights), there already exist 50987 LED lights in the city. It is the responsibility of the Concessionaire to replace/ connect these switch points/ feeder panels with the new Centralized Control and Monitoring System to control and monitor these 50987 existing LED lights (along with 79,451 streetlights). The responsibility of operation and maintenance of these 50987 LED lights also lies with Concessionaire and key performance indicators shall be applicable.

iii. At the expiry of the Contract Period, all rights and titles to, and interests in, all improvements and equipment constructed, or systems installed are vested in Authority, free and clear of all and any liens and encumbrances created or caused by the Concessionaire. The Concessionaire shall surrender possession of the LED luminaires and CCMS panels, along with CCMS bill of material, to Authority with 100% of them in working condition.

iv. A detailed description of activities to be undertaken and services to be provided by the Concessionaire as part of the Project is provided in the Agreement.

v. Implementation Schedule: The Concessionaire has to supply, install, test and commission LED luminaires and corresponding CCMS panels within 8 months from the Effective Date as per the milestones as follows –

Milestone 1 – Installation of minimum 50% of LED Streetlights and corresponding CCMS panels in the first 4 months.

Milestone 2 – Remaining 50% of work in the rest 4 months.

vi. In case the Concessionaire is unable to achieve the milestones, then, 15 days before the end of 4 months or 8 months as the case may be from Effective Date, the Concessionaire will request for extension by a period not exceeding 10 months from the Effective Date to the Authority and the ICE. The Authority, in consultation with the ICE and after satisfying itself of the reasons advanced by the Concessionaire shall accept the extension request. The Authority shall be entitled to levy Liquidated Damages as outlined in Schedule 7 of the Draft Concession Agreement (Vol. II of this RFP) except for the delay due to reasons not under the control of Concessionaire. The Authority will be within its right to declare it as "Concessionaire Event of Default "if the implementation is not completed within 10 months from the Effective Date.

vii. Wattages of LEDs to be installed: The intent of Authority is to replace existing luminaires with LED luminaires to get authority required lighting lux level for different categories of roads as mentioned in schedule-3.. To ensure this, the successful Bidder will have to give demonstration of the performance of the LED luminaires in the different types of the roads on the existing poles and prove that the luminaires meet the BIS standards. The Authority may insist concessionaire to conduct demonstration to find the lux levels of installed luminaires every year. The lux parameters during demonstration has to be measured using calibrated measuring tools and to be recorded in the presence of ICE, Authority's Engineers, concerned BESCOM Engineers. Report on this activity will be submitted to the authority and ICE within three days.

3.5. Daily Coordination

i. The Concessionaire shall assign an overall in charge person suitably qualified and experienced "Project Coordinator" with sufficient experience of having managed the Project of street lighting shall be appointed for coordination and monitoring of day to day activities of entire city network.

ii. Additionally, Concessionaire should deploy the team as proposed, in their Equipment Installation and Manpower Deployment Plan, from their organization who are regular employees and provide the contact details of the same, who shall be accountable for delivering on the said commitments during the Contract Period, coordinate for daily O&M exercise and update Authority as per agreed format. In case, the assigned personnel leave the organization or is reassigned, the Concessionaire has to intimate the same in writing to Authority and advice names of the new officers assigned for the role.

3.6. Safety

i. During the period of installation and O&M, the Concessionaire should ensure implementation of measures to ensure safety of working personnel, as per all applicable laws in general and with special focus in the following.

a. Working at heights
b. Working on/in the vicinity of power supply lines.

ii. Suitable work instructions/procedures shall be prepared for each type of work location (height or type of pole / supply network configuration) and the working personnel shall be trained at regular intervals by a

competent person possessing valid certificate w.r.t safety issues.

iii. All the working personnel shall be provided with appropriate personnel protection equipment such as safety harness for working at heights, safety helmets, Earthing rods, etc. The Concessionaire shall arrange to carryout safety audit at regular intervals by a competent person possessing valid certificate w.r.t safety issues and suitable remedial measures shall be taken based on the findings/recommendation of the safety audit.

iv. Concessionaire holds responsibility of the electrical safety throughout the Contract Period and if electrical accidents and public asset damages occur due to street lighting infrastructure / component under the scope of work during the Period of Contract, Authority shall initiate necessary action as per the Indian Electricity Act 2003 and its subsequent amendments.

3.7. System Documents, User Documents

i. The Concessionaire shall provide all Project related documents. This documentation should be submitted as the Project undergoes at various stages of implementation. Indicative list of documents includes:

- Project Commencement Documentation: Project plan in giving out micro level activities with milestones & deadlines.
- Equipment Documents: Copies of manuals from OEMs, copies of warranties of all the equipment's installed in the Project
- Installation Manual: For all the application systems.
- Training Material: Training material will include the presentations used for trainings and also the required relevant documents for the topics being covered. Training registers should be submitted for same.
- User Manuals: For all the application software modules, required for operationalization of the system.
- System Manual: For all the application software modules, covering detail information required for its administration.
- Standard Operational Procedure (SOP) Manual: The Concessionaire shall be responsible for preparing SOP Manual relating to operation and maintenance of each and every service as mentioned in the RFP. The draft process (SOP) document shall be formally signed off by Authority before completion of final acceptance test. This SOP manual will be finalized by the Concessionaire within 2 months of operationalization, in consultation with the Authority and formally signed off by the Authority.
- Copies of Annual Maintenance Contracts (AMC) for all equipment or block of equipment as renewed every year or at such periodical intervals as may have been agreed between the Concessionaire and the original equipment manufacturer (OEM).

Note: The Concessionaire will ensure upkeep & update all documentation and manuals during the Contract Period. The ownership of all documents, supplied by the Concessionaire, will be with Authority. Documents shall be submitted in two copies each in printed (duly hard bound) & in softcopy formats.

3.8. Grievance Redressal:

i. The Concessionaire will set up a centralized helpdesk for the Project for entire Contract Period on 16X7X365 basis. Further helpdesk shall be operated in 2 shifts, timings as specified by Authority;

ii. The help desk will handle user queries and issues relating to implemented solution

iii. The helpdesk is required to ensure that users can log calls and complaints for any technical issues they face while accessing the system. The following is included in the Scope of Work of the Concessionaire:

- Standard operating procedures (SOPs) shall be created by the Concessionaire;
- In addition to the telephone call, the Concessionaire shall refer complaints through Janahitha (MRC);
- The Concessionaire shall provide comprehensive training to the staff identified by the Authority and shall be in a position to independently manage the work.
- Following is also part of Scope of Work of Concessionaire: (a) development of training material for employees of Authority (b) training to be imparted to Authority (c) provision of call center application (d) development of standard operating procedures with call prioritization guidelines, problem security codes and escalation procedures etc. in consultation with Authority (e) helpdesk related infrastructure;
- Language Capabilities: Kannada and English;
- The service window for helpdesk is 16X7X365 (Monday to Sunday);
- The call statistics will be analyzed every quarter after Go-Live and the number of customer care executives may be ramped up or down accordingly on a week's notice;
- The Concessionaire shall deploy helpdesk application accessible to all users through the Authority's portal for logging issues; and The Concessionaire to provision for inbound calls.

3.9. Capacity Building:

i. The Concessionaire need to provide training and capacity building to Authority's employees and other stakeholders as directed by Authority/TIA. The following is a broad level scope;

ii. The Concessionaire will prepare all the requisite audio/visual training aids that are required for successful completion of the training for all stakeholders. These include the following for all the stakeholders:

- Training manuals for Authority's employee's / stakeholder departments;
- Computer based training modules;
- Presentations;
- User manuals;
- Operational and maintenance manuals for smart components implemented; and
- Regular updates to the training aids prepared under this Project.

iii. The Concessionaire will maintain a copy of all the training material on the portal and access will be provided to relevant stakeholders depending on their need and role. The access to training on the portal would be finalized with Authority. The Concessionaire has to ensure the following points:

- For each training session, the Concessionaire has to provide the relevant training material copies to all the attendees.

- The contents developed shall be the property of Authority with all rights.

iv. The Concessionaire has to ensure that the training sessions held are effective and that the attendees would be able to carry on with their work efficiently. For this purpose, it is necessary that the effectiveness of training sessions is measured. The Concessionaire will prepare a comprehensive feedback form that will capture necessary parameters on measuring effectiveness of the training sessions. This form will be discussed and finalized with Authority.

v. After each training session, feedback will be sought from each of the attendees on either printed feedback forms or through a link available on the web portal. One member of the stakeholder group would be involved in the feedback process and he/she has to vet the feedback process. The feedback received would be reported to Authority for each training session.

3.10. Hand-over of the system at the end of Concession Period

The Concessionaire will supply to the Authority the following before the expiry of the Contract:

i. The Concessionaire shall handover the entire street lighting system with 100 % working condition.

ii. Information relating to the current services rendered and data relating to the performance of the services;

iii. Entire documentation relating to various components of the Project, any other data and confidential information related to the Project;

iv. All other information (including but not limited to documents, records and agreements) relating to the products & services related to the Project to enable Authority and its nominated agencies, or its replacing Concessionaire to carry out due diligence in order to transition the provision of the Project services to Authority or its nominated agencies, or its replacing Concessionaire (as the case may be)

3.11. Grant of Exclusive Right

3.11.1. On and from the date of execution of this Agreement and subject to the right of the Authority to terminate this Agreement under Clause 19, the Authority grants the Concessionaire the exclusive right ("**the Right"**) to:

a. Supply, install, test and commissioning LED based energy efficiency project in streetlights;
b. access all the Project street light points, switching points and all the related infrastructure relating to the Project streetlights forming part of the Project public street lighting system;
c. use a public place measuring a maximum of 1.5 square meters and adjacent to switching points forming part of the Project public street lighting system to install a panel as part of the Equipment;
d. operate and maintain the Project public street lighting system;
e. access and dismantle and remove all existing equipment relating to the Project public street lighting system and thereafter, install the LED lighting fixture and operate, maintain and manage the LED light;
f. appoint contractors, sub-contractors, agents, advisors and consultants to carry out its obligations under this Agreement in accordance with its terms, however, the sole responsibility of the installation and performance of the streetlights will be the responsibility of the Concessionaire; and
g. exercise such other rights as the Authority may determine as being necessary for the purposes incidental and necessary to implement, manage, operate and maintain the Project;

3.11.2. In the event that the Authority fails to fulfil any of its obligations under clauses 2.2.1 and 2.2.2the Project COD shall be extended for a period of time equal to the period of time taken by the Authority in fulfilling all its obligations under clauses 2.2.1 and 2.2.2.

3.12. Rights, Title and Interest to Project street lighting system

3.12.1. The Concessionaire shall, at its own cost and expense, make such improvements to the Project as may be necessary or appropriate to implement the Project in accordance with this Agreement.

3.12.2. The Concessionaire shall not, without the prior written consent of the Authority, use the Project for any purpose other than the purposes of the street lighting system and purposes incidental thereto as permitted under this Agreement or as may be otherwise approved by the Authority.

3.12.3. The Concessionaire shall accept its rights and obligations in relation to the Project on an 'as is where is' basis and confirm having:

a. inspected the Project public streetlighting system, all fixtures thereon and their surroundings;
b. satisfied itself of the condition of the streetlighting system and the nature of the design, work and material necessary for the performance of its obligations under this Agreement;
c. Obtained for itself all necessary information as to the risks, contingencies and all other circumstances which may influence or affect the Concessionaire and its rights and obligations under or pursuant to this Agreement.

3.12.4. If this Agreement is terminated for any reason prior to the Expiry Date, the exclusive Rights and any other rights granted to the Concessionaire under this Agreement shall automatically cease with effect from the Termination Date.

3.12.5. The Concessionaire shall make good any damage caused by it or the Concessionaire Related Parties to any roads, footpaths, conduits, landscaping and other works on any property adjoining the Public Street Lighting System.

3.12.6. Upon occurrence of any loss or damage caused to the streetlights and/or any fixtures related to them, the Concessionaire shall reinstate the street light and/or any fixtures related to them at its own cost after informing Authority/ BESCOM and subsequent compliance as per due procedure. In the event that such loss or damage is caused due to acts or omissions not directly attributable to the Concessionaire or the Concessionaire Related Parties, the Concessionaire shall recover the cost incurred in reinstating such streetlights and/or any fixtures related to them from the proceeds of the insurances obtained by it in accordance with insurance.

3.12.7. The Concessionaire shall not be liable for any liability in relation to the streetlights and any fixtures related to them existing or arising from any event or circumstances occurred prior to the date on which the exclusive right is granted or deemed to be granted to the Concessionaire.

3.12.8. The Authority shall be responsible for operation and maintenance of all Streetlights and any fixtures related to them until the exclusive Right in relation to such Project streetlights is granted or deemed to be granted to the Concessionaire.

3.13. Removal of Project Streetlights by the Authority

3.13.1. If the Authority removes any Project streetlight after the Execution Date, then the Concessionaire shall be entitled to the EMI payment, as the case may be. In case the Authority decide to relocate/shift any of the existing poles covered under this Agreement during the project tenure, the Concessionaire shall not consider such shifting as new pole or new works. The cost of shifting the poles and other infrastructure related to public street lighting shall be borne by the Authority.

3.14. Rights, Title and Interest to Equipment

3.14.1. The ownership, rights and title to the Equipment, including any leased equipment, installed, located, created, provided or procured by the Concessionaire pursuant to this Agreement shall vest with the Concessionaire during the entire Term. The Concessionaire shall have the right to dispose of any Equipment installed by it for the purposes of normal replacement of such Equipment. The Authority shall have no right or claim on any proceeds received from the Concessionaire from such disposal.

3.14.2. The ownership, rights and title to any part of the Project, other than the Equipment, shall remain with the Authority.

3.15. Term

3.15.1. Subject to early termination of this Agreement in accordance with its terms, the initial term of this Agreement is 7 (seven) years from the Project COD (Term), unless extended in accordance with Clause 3.6.2.

3.15.2. No later than 1 year prior to the Transfer Date, Authority will assess the need for continuance of similar services beyond the transfer date and if required will invite for fresh tenders for the similar work.

4. Implementation Period

4.1. Commencement and Duration

4.1.1. The Project implementation period shall commence from the Effective Date and shall continue until the Project COD is achieved. Other than in the event of a qualifying Change in Law, a fundamental Change in Law, a Force Majeure Event or an Emergency, which might have the effect of termination or extension, the Concessionaire shall achieve the Project COD within 8 (eight) months from the Effective Date as per the milestones as follows –

- Milestone 1 – Installation of minimum 50% of LED Streetlights and corresponding CCMS panels in the first 4 months.
- Milestone 2 – Remaining 50% of work in the rest 4 months.

4.1.2. In case the Concessionaire is unable to achieve the milestones, then, 15 days before the end of 4 months or 8 months as the case may be from Effective Date, the Concessionaire will request for extension by a period not exceeding 10 months from the Effective Date, to the Authority and the ICE. The Authority, in consultation with the ICE and after satisfying itself of the reasons advanced by the Concessionaire shall accept the extension request. The Authority shall be entitled to levy Liquidated Damages as outlined in Schedule 6 of the Draft Concession Agreement except for the delay due to reasons not under the control of Concessionaire. The Authority will be within its right to declare it as "Concessionaire Event of Default" if the implementation is not completed within 10 months from the Effective Date.

4.2. Applicable Permits

4.2.1. The Concessionaire shall be responsible for obtaining all Applicable Permits for the Project and Concessionaire Related Parties to perform their obligations under this Agreement.

4.2.2. The Authority shall make best endeavors to assist the Concessionaire in obtaining any Applicable Permit from the relevant Government Authorities. The _____, shall act as the representative of the Authority.

4.3. Implementation of Project Street Lighting System

4.3.1. The Concessionaire shall be responsible to install LED streetlights, smart meters and Centralized Control and Monitoring System (CCMS) in accordance with the provisions of the Agreement, Installation Plan, Applicable Permits, Applicable Laws, the Performance Standards and Good Industry Practice.

4.3.2. In the course of installing LED fixtures, all existing conventional luminaries removed by the Concessionaire, including any damaged fixtures shall be disposed off by Concessionaire without any liability to Authority in compliance to the E-Waste (Management) Rules 2016; however, such removed luminaries have to be done with the approval of the Authority. All existing energy meter shall be removed and handed over to the Authority /BESCOM with details such as location of the meter, type of the meter and other meter related specifications. The Concessionaire shall carryout the activities in co-ordination with EE/Independent Chartered Engineer.

4.4. Commissioning

4.4.1. Once the equipment(s) is installed, the Concessionaire shall submit a notice to the Independent Chartered Engineer, with a copy to the Authority, notifying the installation of the equipment(s). The Independent

Chartered Engineer and the Authority shall have the right to inspect the installed equipment(s) to ensure that all the equipment(s) have been installed in accordance with the Equipment Installation Plan and technical specification set forth in.

4.4.2. The Independent Chartered Engineer, when satisfied, after undertaking verifications in accordance with Schedule 4, that the equipment(s) have been installed in accordance with the Equipment Installation Plan, shall, within 3 Days, issue a certificate to the Concessionaire, with a copy to the Authority, certifying that all equipment(s) across all the wards have been successfully installed and meets the technical criteria/standards ("Equipment Commissioning Certificate"). Issuance of the equipment(s) Commissioning Certificate shall not be unreasonably withheld or delayed. In the event that the Independent Chartered Engineer, upon being satisfied that the equipment(s) have been installed in accordance with the Equipment Installation Plan, fails to issue the Commissioning Certificate within the time period prescribed above, such Commissioning Certificate shall be deemed to have been granted. Any Dispute in relation to issuance of the Commissioning Certificate shall be resolved in accordance with Dispute resolution procedure.

4.4.3. The date on which the equipment(s) Commissioning Certificate for complete project area is issued shall be deemed to be the Project Commercial Operation Date ("Project COD").

4.4.4. All the lights / equipment installed under the Project will be energized circuit wise (simultaneously), immediately on installation. The Authority will ensure that BESCOM is adequately informed regarding the implementation of the Project which involves replacement of Streetlights with LED lights, replacement / installation of smart meters for recording the readings, etc.

4.4.5. The EMI Fee shall be payable to the Concessionaire, from 1st day of the following month subsequent to achieving the Commissioning Certificate with reference to Clause 4.5.3 above. The EMI shall be paid as per the calculation in Schedule - 5. The Concessionaire shall be entitled for EMIs till the end of this Contract which will be either on achieving the Expiry Date or due to Termination.

4.5. CCMS and Control Room

4.5.1. In addition to installing LED streetlights, static smart meter, the Concessionaire shall set up a CCMS and control room to monitor and operate the public street lighting system in the space provided by the Authority. The Concessionaire shall set up the CCMS and control room within 90 (ninety) Days of execution of this Agreement. The CCMS and control room shall be used solely for the purposes of monitoring and operating the Project street lighting system. The Concessionaire shall at its own cost be responsible for upkeep and maintenance of the CCMS and control room during the Term.

5. Operation and Maintenance Activities

5.1. Commencement and Duration

5.1.1. The Concessionaire shall commence the O&M Services in respect of the public street lighting system from the date of issuance or deemed issuance of the LED streetlights Commissioning Certificate. The Concessionaire shall continue to provide the O&M Services for the Project until the earlier of the Expiry Date or the Termination Date.

5.2. O&M Services

5.2.1. The Concessionaire shall provide O&M Services in relation to the street lighting system in accordance with the standards set out at Schedule 5, provisions of the Agreement, Applicable Laws, Applicable Permits, Performance Standards and Good Industry Practice.

5.2.2. The Concessionaire shall not be liable for its failure to provide O&M Services in relation to the street lighting system in accordance with the standards set out at Schedule 5, during any period for which electricity is not supplied by BESCOM to the streetlights. In such cases, the concessionaire shall inform the status to the authority and communicate to BESCOMs to get the power supply restored as early as possible and attend the complaints as per standards set out at schedule 5.

5.3. Complaint Book

5.3.1. The Concessionaire shall operate and maintain a toll-free number to receive consumer complaints. In addition, a complaint box shall be provided at the Authority's office. The Concessionaire shall establish a procedure to deal with complaints promptly and effectively, and the Independent Chartered Engineer shall review such procedure prior to the Effective Date or following its appointment. The Concessionaire shall accept any reasonable suggestion of the Independent Chartered Engineer and amend the complaint procedure accordingly.

5.4. Complaint Redressal

5.4.1. The Concessionaire shall take all necessary action to address the concerns of the complainant as follows:

a. any complaint relating to LED streetlights shall be redressed within 24 hours(including holidays) from the time of receipt of the compliant, as evidenced by the records maintained by the Concessionaire;
b. The Concessionaire shall replace the non-glowing LED bulbs within 24 hrs with the same lux output.;
c. Any other complaint relating to the public street lighting system like cable joints, power supply issues, cable burnt out, connection issues etc., shall be resolved by the Concessionaire as soon as practically possible.

5.4.2. If a complainant is not satisfied with the action taken by the Concessionaire, it may make a representation to the Authority. The Authority may upon receiving any such representation, at its sole discretion, direct the Concessionaire to take such further reasonable action as may be appropriate for a fair and just redressal of such complaint.

5.5. Lux Level, Illumination Ratio and Power Factor Measurements

5.5.1. The Authority may conduct lux level, Illumination ratio and power factor measurements on the streetlights

randomly selected by the Authority in its discretion. The Concessionaire shall have the right to participate in the lux level, Illumination ratio and/or power factor measurements, along with the Authority / Independent Chartered Engineer.

5.5.2. If the power factor is determined to be below 0.95 or the measured lux levels or Illumination ratio are found to be below the applicable standards, the Concessionaire shall be required to replace such LED streetlights within 24 hours of the Authority notifying to the Concessionaire the non-compliance with the applicable standards.

5.6. Project staff, Vehicle and Equipment's:

a. **Implementation staff:** For the implementation phase, Concessionaire shall appoint a project coordinator, with corresponding education and experience criteria in consultation and acceptance with authority:

Sl. No.	Staff details	Education and Experience	No's	Roles and Responsibilities
1.	Project Coordinator	• Must be any degree holder. • Must have worked as project manager or coordinator in similar kind of project with minimum 3 years' experience	1	• Overall management of Administration and control of PPP staff during the project period. • Act as one point of contact between the Concessionaire and the Authority/ICE. • Day to day monitoring the replacement of streetlights and energy meters' project during implementation phase and submitting weekly reports of replaced streetlights to ICE and Authority. • Consolidating and submitting the daily uptime reports, energy consumption reports from CCMS to ICE and Authority. • Coordination between Authority and BESCOM officials for various activities during implementation and O&M phase.

The Concessionaire shall submit the details of the staff, vehicles for the implementation phase and must ensure that the implementation is in accordance to the milestones defined.

b. Operation & Maintenance (O&M) staff:

For every zone/ package (as formed by Authority), Concessionaire must provide the following staff for the operation and maintenance (O&M) of streetlights with corresponding education and experience criteria:

Sl. no.	Staff details	Education and Experience	No's	Roles and Responsibilities
1	Electrical Supervisor(s)	• Must be at least Diploma holder in Electrical Discipline.	1 No's	• Must collect complaints registered in helpline and from various sources and distribute to

Sl. no.	Staff details	Education and Experience	No's	Roles and Responsibilities
		• Must hold a valid electrical supervisor license issued by GoK. • Must have worked as an Electrical supervisor minimum 3 years' experience O&M of streetlights.		vehicles/electricians as per wards allotment. • Monitoring vehicles and Electricians and drivers associated with it. • Guiding Electricians regarding the addressing of complaints and addressing complaints received by Authority on priority. • Guiding drivers routes to be followed and priority locations. • Conducting ward inspections everyday evening and confirming all the received complaints are addressed and observing for non-functional streetlights which are not registered and take actions towards addressing those complaints Co-ordination with BESCOM. • During O&M of electrical components under jurisdiction of BESCOM affecting street lighting infrastructure. • Submitting daily complaint addressed reports to Electrical Engineering section of ULB. Collecting complaints from Authority and addressing in priority. • Identifying Energy thefts points by tapping due to decorative lights and flood lights, and by other means. Also informing Authority and assisting for further needful actions. • Monitoring O&M of High-mast towers concerning towards motors, Winch, ropes, carriage. • Supervisor must ensure safety of electricians working on live electrical components and at heights by checking personal protective equipment are used while working under such situations. • updating stock details of Streetlights and Components to Authority. • Maintaining essential equipments like tester, clamp meter, earthing rod in the vehicle. • Maintaining complaint register each vehicle. • And other responsibilities given

Sl. no.	Staff details	Education and Experience	No's	Roles and Responsibilities
				by Authority and concessionaire.
2.	Electrician(s)/ Electrical wiremen.	• Must be at least ITI holder in Electrical Trade • Must Hold a valid electrical wiremen license issued by GoK • Must have worked as an Electrician for minimum 2-year experience O&M of streetlights.	20 No's	• Addressing complaints received by supervisor and Authority. • On-field replacement/rectifications of faulty streetlight and any associated components. • Cleaning glass cover regularly, • aligning streetlights properly, • cleaning feeder panel box, • insulating live wires/cables which are drawn out from metal poles and reinserting inside the pole. • Removing birds nest and other residuals from high mast tower (if exists). • Regularly oiling/ greasing ropes/winch/ motor associated with high-mast structures. • Aligning carriage of high-mast structures properly. • Closing doors of feeder panel if opened. • Conducting ward inspections everyday evening and observing for non-functional streetlights due to electrical faults and taking action towards clearing such faults and collecting complaints which are not registered through any means and registering and attending such complaints next day. • Updating complaints addressed in complaint register maintained in vehicle and reporting to supervisor and Authority. • Addressing complaints on priority which are instructed by Authority. • Other responsibilities given by supervisor and Authority and concessionaire.
3.	Driver(s)	• Must hold a valid 4 wheeler Driving license issued by GoK. • Must be well experienced in driving ladder mounted jeep/ hydraulic vehicle.	20 No's	• Must take electrician(s) to the location of complaint as directed by supervisor and electrician. • Other responsibilities given by supervisor and Authority and concessionaire.

Sl. no.	Staff details	Education and Experience	No's	Roles and Responsibilities
4.	Assistant/Helper	• Must have experience of minimum 1 year in any electrical domain	20 No's	• Must assist Electrician and driver in various O&M tasks. • loading required stock and personal protective equipment from warehouse to vehicles every day. • Assisting Electricians while working in heights. • Providing additional ladder to electricians wherever required • Assisting Supervisor/ Electricians to conducting ward inspections • Other responsibilities given by supervisor and Authority and concessionaire.

- Concessionaire shall submit the copies of education certificates, license, Identity and address proof and all O&M staff working under Project.
- All O&M staff shall adhere to roles and responsibilities mentioned in above table.
- All O&M staff shall exhibit polite behavior with Authority and public. However, misconduct is proven, Authority reserves all rights to ask for replacement of such staff.
- Concessionaire shall facilitate personal protective equipment like: insulated gloves, insulated shoes, helmets, belts, ropes etc. for O&M staff working on live electrical components and heights.
- Concessionaire shall pay salary and other essential benefits to all O&M staff in accordance to guidelines of department of Labour,GoK and timely revisions.
- Every package shall have 20 teams for addressing street light complaints. Each team must essentially have 1 electrician, 1 driver and a helper accompanied with ladder mounted jeep (to reach at least 10 mtr height).
- Concessionaire shall be able to arrange alternate O&M staff in absence of regular staff. Authority will not accept such reasons, which will delay in addressing streetlights complaints.

c. Operation & Maintenance Vehicles:

For every zone/ package (as formed by Authority) at any point of time during the O&M phase, Concessionaire must compulsorily provide the following vehicle:

Ladder mounted Jeep (20' Nos):

- Concessionaire should compulsorily provide 20 (atleast 1 ladder jeep for a block of 5,000 lights) ladder mounted jeeps for attending street lights irrespective of number of complaints.
- The provided Jeeps must have valid insurance, fitness certificate and other essential certificates issued by RTO, GoK.
- The ladder deployed for maintenance should be fitted with GPS equipment.
- Mounted Ladder must be electrically insulated against from jeep and earth to avoid electrical accidents.

- Jeep must be mounted with metal box large enough to accommodate sufficient streetlights and associated components to avoid damage against rain. The metal box must have lock and key system to avoid thefts.
- Each jeep must have essentially clamp meter, earthing rod, insulation tapes, and additional wooden ladder (minimum 10 mtr.).
- Each jeep must accommodate a driver, electrician and a helper.
- A Jeep once designated to particular Zone of Package, the Same vehicle must not be used for other zone/s for any purpose.
- Contractor must arrange alternate jeep in case of repair and maintenance of provided jeeps within 2 days.
- Designated vehicle must not be used for any other purposes within or outside the limits of the corporation without the permission from authority.
- Name of the Corporation and control room phone number must be written in visible size over the body of the designated vehicle.
- In addition to ladder mounted jeep, Concessionaire must be able arrange crane(s) and associated staff for the purpose repairing high mast structures, median street lighting Infrastructures, flyover/ bridges street lighting and wherever it is not possible to provide O&M services through normal ladder mounted jeeps. Concessionaire will not be paid for such expenses.

Concessionaire must be able to demonstrate O&M staff and Vehicles if Authority intends for inspection at any time during the period of project.

6. Independent Chartered Engineer

6.1. As a Condition Precedent under Clause 2.2.3(i), within 30 Days of the Execution Date, the Authority shall appoint an appropriately qualified firm as the Independent Chartered Engineer. The term of appointment of the Independent Chartered Engineer shall, unless mutually agreed by the Authority and the Concessionaire, be until the Transfer Date. The procedure for appointment, replacement and the scope of work of the Independent Chartered Engineer are set out at Schedule 4.

6.2. All fees, costs, charges and expenses payable to the Independent Chartered Engineer shall be borne by the Authority.

6.3. The Authority and the Concessionaire may mutually decide to replace the Independent Chartered Engineer in any of the following circumstances:

a. if either of them have a reason to believe that the Independent Chartered Engineer has not discharged its duties in accordance with the terms of this Agreement;
b. if they decide not to renew the appointment of the Independent Chartered Engineer; or
c. if the Independent Chartered Engineer tenders its resignation in accordance with the terms of its appointment letter.

6.4. The Authority shall ensure that the Independent Chartered Engineer is provided with all the information required or sought by the Independent Chartered Engineer, in order for the Independent Chartered Engineer to perform its functions, duties and obligations in relation to this Agreement, along with relevant extracts of this Agreement annexed to the appointment letter of the Independent Chartered Engineer highlighting all the rights and obligations of the Independent Chartered Engineer. The appointment letter signed and returned by the Independent Chartered Engineer shall acknowledge acceptance of its rights and obligations set out in this Agreement. The Independent Chartered Engineer shall also have the right to seek additional information from the Authority and the Concessionaire in order to fulfil its obligations under this Agreement and the Independent Chartered Engineer's appointment letter.

6.5. Except as specifically provided in this Agreement, the Independent Chartered Engineer shall have no authority, whether express or implied, to amend, vary or curtail any of the rights or obligations of the Parties.

7. Representatives of the Parties

7.1. Authority Representative

7.1.1. The Authority Representative shall have the full authority to act on behalf of the Authority for all matters relating to this Agreement.

7.1.2. The Authority shall have the right to remove the Authority Representative and appoint another Person in its place by giving 10 Days' notice in writing to the Concessionaire.

7.2. Concessionaire Representative

7.2.1. The Concessionaire Representative shall have the full authority to act on behalf of the Concessionaire for all matters relating to this Agreement.

7.2.2. The Concessionaire shall have the right to remove the Concessionaire's Representative and appoint another Person in its place by giving 10 Days' notice in writing to the Authority.

8. Reporting

8.1. During the Term, the Concessionaire shall provide monthly reports to the Authority about the following matters:

a. Lamp failure report;
b. Meter failure report;
c. Power failure report;
d. Software and hardware failure report;
e. Monitoring and verification report.
f. Daily complaints redressal report.
g. Daily Uptime report,
h. Failure report due to cable damage

8.2. The format for all reports shall be developed by the Concessionaire based on the discussion and finalization with Authority /Independent Chartered Engineer.

8.3. If the Concessionaire does not issue monthly reports within 3 (three) Days of the end of the relevant Month for any 3 (three) Months in a year or there is a material information falsely provided in more than 3 (three) reports during the whole Term, this event shall constitute a Concessionaire `s Event of Default.

8.4. In addition to the reports mentioned in clause 8.1, the Concessionaire shall provide daily reports during the Term. If the Concessionaire does not issue daily reports for 5 consecutive Business Days or for more than 10 Days in a Financial Year, this event shall constitute a Concessionaire `s Event of Default.

8.5. The reports to be provided in this Clause 8 shall be substantially in the format set out at Schedule 5.

8.6. The concessionaire shall intimate the authority about any case of cable failure, conductor breakdown, pole damages, UG cable damages in the streetlighting network on priority basis.

9. Obligations of Parties

In addition to the other obligations of the Parties set out in detail elsewhere in the Agreement, this Clause 9 sets out the key obligations of the Parties.

9.1. Obligations of the Concessionaire

9.1.1. During the Term, the Concessionaire shall,

a. install the LED lights, Centralized Control and Monitoring System (CCMS), Smart Meters, Brackets with clamps, bolts and nuts, connecting wires and for entire Project

b. provide the O&M Services for the entire Project tenure.

9.1.2. Except as otherwise provided in this Agreement, the Concessionaire shall not assign its rights, title or interest in this Agreement in favour of any Person without the prior written consent of the Authority,

9.1.3. The Concessionaire may engage any Person who possesses the requisite skill, expertise and capability to provide the O&M Services provided that:

a. the Concessionaire shall at all times be solely responsible to perform all its obligations under this Agreement and it shall at all times be solely responsible for non-performance or for any defect, deficiency or delay in providing the O&M Services;

b. any contract that it enters with an Associate in respect of the Project shall be on an arm's length basis.

9.1.4. Any document, including maps, drawings, past electricity bills etc., provided by the Authority to the Concessionaire shall always remain the property of the Authority and shall not be used by the Concessionaire for any purposes other than for the Project. The documents shall, unless otherwise agreed upon by the Authority, be returned by the Concessionaire to the Authority on the Transfer Date.

9.1.5. Any document relating to the Project, whether prepared by the Concessionaire or a third party, shall be handed over by the Concessionaire to the Authority free of cost on the Transfer Date.

9.2. Obligations of the Authority

9.2.1. The Authority shall,

a. Deposit in the Escrow Account equivalent to 3 times the EMI Fee within 15 (fifteen) days from achieving the Project COD.

b. pay the EMI Fee Payments to the Concessionaire every month subject to Clause 4.5.3 and Clause 4.5.5;

c. make best endeavours to assist the Concessionaire in obtaining any Applicable Permit from the relevant Government Authority.

d. Notwithstanding anything to the contrary contained in this Agreement, the Authority may, after giving 60 Days" notice to the Concessionaire, assign any of its rights and benefits and/or obligations under this Agreement to an assignee who is a Government Authority.

e. The Authority agrees and acknowledges that it shall, as soon as practicable and at its sole cost and expense, rectify or provide for all faults, inadequacies or shortcomings in the infrastructure relating to Project streetlights (except the streetlights and accessories installed by the Concessionaire) that are identified and reported by the Concessionaire to the Authority from time to time during the Term.

9.3. Emergencies

9.3.1. If an Emergency arises during the Term, the Authority may instruct the Concessionaire that such measures are undertaken by the Concessionaire as necessary and practicable to ensure that the Emergency is dealt with and normal operation of the Project public street lighting system resumes as soon as is reasonably practicable, provided that the Concessionaire shall not be obliged to provide any service which it is neither qualified nor competent to provide.

9.3.2. Any additional costs incurred by the Concessionaire, in dealing with an Emergency shall be borne by the Authority upon the Concessionaire raising the payments statement in accordance with clause 12.2 which shall include a separate item headed "Emergency Costs". The invoice shall provide supporting documentary evidence for the cost incurred by the Concessionaire. The Concessionaire shall not be paid any such cost if the Emergency had been caused due to its own act or omission.

9.3.3. In the event that the Concessionaire undertakes to provide additional or alternative services in case of an Emergency, the Concessionaire shall make best efforts to meet the standards set out at Schedule 5 or any other standards pre-agreed with the Authority before providing such services.

9.3.4. Notwithstanding anything contained in this Agreement, if an Emergency arises during the validity of the Agreement, the Authority shall have the right to enter the Concessionaire's control room and call center and take over operation of the Project public street lighting system until such time the Emergency subsists.

10. Employees and Training

10.1. The Chief Commissioner, BRUHAT BENGALURU MAHANAGARA PALIKE shall remain the principal Authority of the municipal employees working for the Authority's lighting department. Such employees may or may not, at the Concessionaire's sole discretion, be seconded to the Concessionaire for a specific duration and under terms and conditions to be agreed upon between the Authority and the Concessionaire. The Concessionaire has no obligation under this Agreement to employ directly or indirectly any of the Authority's employees.

10.2. Notwithstanding anything contained in clause 10.1, the Concessionaire shall train the employees of the Authority's department to operate, maintain and repair the streetlights and systems installed by the Concessionaire. Training shall include both classroom and practical instruction. Course materials shall include the Concessionaire's supplied operation and maintenance plans and manufacture manuals. This training shall be provided once every year during the entire Term.

10.3. The Concessionaire's Related Parties shall be under the complete control of the Concessionaire and shall not be deemed to be employees of the Bhurat Bengaluru Mahanagara Palike.

11. Performance Security

11.1. Performance Security

11.1.1. The Concessionaire shall submit to the Authority the Performance Security in the form of bank guarantee (SFMS) from a nationalized Bank with a branch in Bengaluru, in the form set out at Annex 2, payable at Bangalore, to secure the due performance of the Concessionaire's obligations under this Agreement during the Term (Performance Security). The charges for providing the Bank Guarantee shall be borne by the Concessionaire.

11.1.2. Performance Security in the form of Bank Guarantee shall be equal to Rs._____ (Rupees _____only) approximately equivalent to 5% of the Contract price of Rs. _____ _____and shall be initially valid for at least 34 months (8 months of implementation or any other extended period and 12 months of first year O&M) subject to condition that it should be extended to till transfer date or as per clause 11.1.3 and 11.1.4

11.1.3. The Concessionaire shall maintain the Bank Guarantee in full force and effect till the Transfer date.

11.1.4. If the Bank Guarantee is scheduled to expire prior to the Transfer Date, then at least 30 Days prior to the scheduled expiry of the Bank Guarantee, the Concessionaire shall arrange for an extension or replacement of the Bank Guarantee. If the Concessionaire fails to extend or replace the Bank Guarantee, the Authority shall be entitled to receive the un-drawn amount under the Performance security. The amount so received shall be treated as cash- retention and to the extent that there are no outstanding claims there to, shall be released, without any interest on such amount, upon submission of a new Bank Guarantee acceptable to the Authority or upon the scheduled date of expiration of the Bank Guarantee.

11.2. Appropriation of Performance Security

11.2.1. The Authority shall have the right to encash Bank Guarantee and claim the amount guaranteed on demand upon the Concessionaire's failure to honour any of its obligations, responsibilities or commitments during the Term in respect of any amount due from the Concessionaire to the Authority, including any Delay of Liquidated Damages or Performance Liquidated Damages that the Concessionaire is liable to pay under this Agreement.

11.2.2. If the Authority draws on Bank Guarantee, in part or in full, the Concessionaire shall immediately, within 7 (seven) Days of such withdrawal, restore the value of the Performance security in the form of Bank Guarantee to the amount stated in Clause 11.1.1.

11.3. Release of Performance Security

11.3.1. The Performance Security shall remain in force and effect till the Transfer Date and shall be released to the Concessionaire after 60 (sixty) days from the Transfer Date, provided, however, that the Performance Security shall not be released if the Concessionaire is in breach of this Agreement. Upon request made by the Concessionaire for release of the Performance Security along with the particulars which establish satisfaction of the requirements, the Authority shall release the Performance Security forthwith.

12. Payment Mechanism

12.1. The Concessionaire shall be entitled to

12.1.1. EMI Fee

a. Bidder shall have to consider the Buy-back value of the dismantled luminaires while quoting the lowest EMI.

b. The EMI fee of Rs. (------) shall be payable, on a monthly basis, to the Concessionaire in relation the public street lighting system after the achievement of Project COD.

c. EMI Payment due date: 30th of the next month

12.2. Invoicing for EMI Fee

12.2.1. Within 3 (three) Business Days of commencement of each Month, the Concessionaire shall submit to the Authority a statement substantially in the format set out at Annex 4 setting out the details of the EMI Fee for the preceding Month, calculated in accordance with clause 12.1, as evidenced by a consolidated report evidencing adherence by the Concessionaire of the performance standards set out at Schedule 5. (Payment Statement).

12.2.2. Within 3 (three) Business Days of receipt of the Payment Statement, the Authority shall verify it for any apparent error such as mathematical miscalculations. In the event that the Authority notifies any apparent error in writing to the Concessionaire within the time specified in this clause 12.2.2, the Concessionaire shall immediately rectify such error and re-issue the Payment Statement by no later than 2 (two) Business Days of receipt of notification of such error from the Authority. The process set out in clause 12.2.3 shall then apply to any re-issued Payment Statement.

12.2.3. In the event that Authority does not notify any error within 3 (three) Business Days of receiving the Payment Statement, such Payment Statement shall be deemed to have been accepted by the Authority.

12.2.4. In the event that the Authority does not discover any error in relation to the Payment Statement, then the Authority shall, within 3 (three) Business Days of receipt of such Payment Statement, issue instructions to the Escrow Bank along with all relevant documents to release 75% of the EMI Fee Payment to the Concessionaire.

12.2.5. Subject to Clause 12.2.5, Authority shall, within 10 Business Days of the date of acceptance of the Payment Statement and upon verifying adherence of the Concessionaire to performance standards set out at Schedule 5, issue instructions to the Escrow Bank along with all relevant documents to release the remaining 25% of the EMI Fee to the Concessionaire.

12.2.6. In the event that the Authority wishes to exercise its right to set-off any amounts in accordance with clause 12.4, it shall instruct the Escrow Bank accordingly. The Authority shall communicate exercise of its set-off rights to the Concessionaire in writing, giving reasons and relevant details concerning the exercise of such right.

12.2.7. Except as expressly provided otherwise in this Agreement, the Concessionaire shall not levy, collect or

recover from the Authority any charge or fee or claim any costs, expenses or any other reimbursement, other than the EMI Fee Payment.

12.3. Default Interest Rate

12.3.1. Upon a failure of a Party to make a payment due and payable by it on the due date for such payment, the defaulting Party, as the case may be, shall be liable to pay default interest on all such outstanding amounts at prevailing medium term prime lending rate of State Bank of India per annum or part thereof. This is without prejudice to any Party's right to terminate this Agreement in accordance with clause 20 or any other right or remedy available to it under this Agreement or Applicable Laws.

12.4. Rights of Set-off

12.4.1. The Concessionaire shall not be entitled to retain or set-off any amount due to the Authority, but the Authority may retain or set-off 25% of the EMI Fee Payments against any amounts due and payable from the Concessionaire to the Authority, including Delay Liquidated Damages and Performance Liquidated Damages.

12.4.2. If the payment or deduction of any amount pursuant to Clause 12.4.1 is disputed, then any undisputed element of that amount shall be paid, and the disputed element shall be dealt with in accordance with Clause 21.

12.5. Taxes

12.5.1. All payments payable by the Authority to the Concessionaire under this Agreement, including, the EMI Fee Payment are inclusive of all Taxes, if applicable. Any Change in Law on account of the introduction of new Taxes or change in the rates of existing Taxes shall be to the account of and payable by the Authority, as the case may be.

12.5.2. The Authority shall be entitled to make any deductions at source in accordance with Applicable Laws.

12.5.3. The Concessionaire shall be responsible for all compliance related to the payment of any Taxes payable by it under this Agreement and shall solely be responsible for any proceedings initiated by the relevant Government Authorities, in respect of the non- payment, short-payment, non-compliance, penalty, interest or other such issue, and for all liabilities and expenses related to such proceedings.

12.5.4. If any proceedings are initiated against the Authority by any relevant Government Authority for failure of the Concessionaire to comply with clause 12.5.3, the Concessionaire shall fully indemnify and compensate the Authority, as the case may be, in accordance with Clause 16.

12.5.5. If any proceedings are initiated against the Concessionaire by any relevant Government Authority for failure of Authority to comply with Clause 12.5.1, the Authority shall fully indemnify and compensate the Concessionaire in accordance with Clause 16.

12.6. Clean Development Mechanism

12.6.1. The Concessionaire shall be entitled to claim clean development mechanism benefits or other forms of similar benefits arising out of the Project. The Authority shall provide all reasonable assistance to the Concessionaire in registering the Project as a clean development mechanism activity. 50% of any clean

development mechanism benefits arising out of the Project shall be in favour of the Concessionaire while 50% shall be received by the Authority.

12.7. Notices and Statements

12.7.1. All notices, statements and documents, including copies of any bills, required to be provided by a Party pursuant to this clause 12 shall be provided by it to both the Parties.

12.8. Escrow Arrangement

12.8.1. The Escrow Agreement shall, inter-alia, provide for:

a. the appointment of the Escrow Bank for the Term;

b. the terms and conditions of the appointment of the Escrow Bank, including the fees to be charged by the Escrow Bank, which shall be borne by the Concessionaire;

c. the obligation of the Authority to deposit amounts in accordance with Clause 9.2.1(a) and Clause 9.2.1(b), respectively, with the Escrow Bank simultaneously with the execution of the Escrow Agreement and otherwise in accordance with the terms of this Agreement;

d. the release of amounts deposited by the Authority to the Concessionaire in accordance with the procedure set out in Clause 12.2; and

e. Other specific rights and obligations of the parties to the Escrow Agreement, including a mechanism for provision of documents and issuance and receipt of instructions for release of payments.

13. Liquidated Damages

13.1. Delay Liquidated Damages

13.1.1. If the Concessionaire fails to achieve the Project COD within the implementation period for reasons other than those set out in Clauses 9.3, Article 15 and 17, it shall pay Liquidated Damages to the Authority at the rate provided in Schedule 6 (Delay Liquidated Damages). If the Concessionaire fails to achieve the Project COD within 8 months of the Project implementation period which can be extended by 2 months with Liquidated Damages as per Schedule 6, the Authority shall have the right to terminate this Agreement under Clause 19.1 and encash the Performance Security.

13.2. Liability for shortfall in O&M Services

13.2.1. Subject to the provisions of this Clause 13.2, in the event that the O&M Services do not meet the standards set out in Schedule 3, then the Concessionaire shall pay liquidated damages at the rates provided in Schedule 6 (Performance Liquidated Damages). The Performance Liquidated Damages shall be payable from the date of Project COD.

13.2.2. In the event that the O&M Services fail to comply with the standards set out in Schedule 3 due to inadequacies or shortcoming on the Authority's part to maintain, repair or replace, as the case may be, the infrastructure relating to the public street lighting system (except for the Equipment installed by the Concessionaire) or during the period of no supply of electricity to the streetlights, the Concessionaire shall not be liable to pay any penalty till such time such infrastructure is restored in good working condition by the Authority or the supply of electricity to the streetlights is resumed, as the case may be. In addition, until the Authority restores such infrastructure to good working condition or supply of electricity to the streetlights is resumed, the Authority shall continue to make the EMI Fee for the relevant part of the public street lighting system.

13.2.3. Upon becoming aware of any inadequacy or shortcoming in the infrastructure relating to a Project streetlights; or absence of electricity supply, the Concessionaire shall promptly report them to the Authority. Any Dispute that may arise between the Authority and the Concessionaire in relation to the existence of any inadequacy or shortcoming in the infrastructure relating to a Project streetlights or rectification of such inadequacy or shortcoming or availability of electricity supply shall be referred to and decided by the Independent Chartered Engineer.

13.3. Payment of Liquidated Damages

13.3.1. Any Delay Liquidated Damages or Performance Liquidated Damages, as the case may be, shall be payable by the Concessionaire within 15 (fifteen) Business Days of receipt of a demand notice from the Authority. In the event that the Concessionaire fails to pay such damages within the specified period, the Authority shall have the right to recover the amount of such damages either by exercising its right to set-off under Clause 12.4 or by en-cashing the Performance Bank Guarantee.

13.3.2. This provision shall not prejudice the right of the Authority to terminate this Agreement in accordance with clause 19.1 or any other right that the Authority may have under the Agreement or Applicable Laws.

13.4. Limitation of Liability

13.4.1. The aggregate liability of the Concessionaire to the Authority under this Agreement in any Financial Year shall not exceed 50% of the sum of the EMI Fee payments for such Financial Year. The limitation of liability shall not apply to nor be reduced by:

a. payments made by the Concessionaire pursuant to its insurance policies;

b. the Concessionaire's liability in case of fraud, fraudulent misrepresentation, wilful misconduct or Wilful Default, gross negligence or corrupt practices; or

c. the Concessionaire 's liability in respect of any failure to pay any Concessionaire Related Parties.

13.4.2. Neither the Concessionaire nor the Authority shall be liable to each other under this Agreement for any loss of profit, loss of revenue or any other indirect or consequential damages that may be suffered by the other Party.

13.4.3. Unless this Agreement provides otherwise, no approval, expression of satisfaction, comment, review, payment or certificate whatsoever made or given (or any failure to make or give the same) by the Authority, its representatives or employees under this Agreement, shall relieve the Concessionaire of any of its obligations, risks or liabilities under this Agreement.

14. Change in Ownership

14.1. The Concessionaire shall ensure that:

a. In case the Concessionaire is a single entity, then the Concessionaire shall be responsible for the entire duration of the Project.

b. If the Concessionaire is a Consortium, then, at all times during the Term: (i) the Lead Member shall be responsible for the entire duration of the Project, however the entire consortium (all members) would be jointly and severally liable.

14.2. Constituent Documents

a. The Concessionaire shall ensure that its articles of association adequately reflect the provisions of clause 14.1 and the relevant commitments, obligations and responsibilities of the selected Bidder.

b. In particular, the memorandum and the articles of association of the Concessionaire shall, if required, be amended within 3 (three) Months from the Effective Date to reflect the shareholding pattern, provisions relating to the restrictions on change in the shareholding pattern as set out in this Agreement.

c. Until the Project COD, any subsequent change in the memorandum or the articles of association which aim to amend the provisions mentioned in Clause 14.2(b) shall require prior written approval of the Authority and the memorandum and the articles of association of the Concessionaire shall include a specific provision to this effect.

15. Change in Law

15.1. Consequences of Qualifying Change in Law

15.1.1. If a qualifying Change in Law occurs or is shortly to occur, then a Party may notify the other Parties expressing its opinion on the likely effects of the qualifying Change in Law, giving details of its opinion on whether:

a. any change is required to the scope of work to be performed by the Concessionaire;

b. any change is required to the terms of this Agreement to deal with such qualifying Change in Law;

c. relief from compliance with any obligations is required, including the obligation of the Concessionaire to achieve the Project COD, as the case may be, or to comply with the standards set out at Schedule 3 during the implementation of any relevant qualifying Change in Law;

d. any increase in costs (other than incurring additional capital expenditure), or any loss of operating cash flow or delay is likely to result from the qualifying Change in Law; and

e. any capital expenditure is required or no longer required as a result of a qualifying Change in Law.

15.1.2. As soon as practicable but no later than 15 (fifteen) Days after receipt of any notice from a Party under clause 15.1.1, the Parties shall discuss and agree the issues referred to therein and any ways in which the Concessionaire can mitigate the effect of the qualifying Change in Law, including:

a. providing evidence that the Concessionaire has made best endeavours (including, where practicable, the use of competitive quotes) to oblige the Concessionaire Related Parties to minimize any increase in costs and maximize any reduction in costs;

b. demonstrating how any capital expenditure to be incurred or avoided is being measured in a cost effective manner, including showing that when such expenditure is incurred or would have been incurred, foreseeable Changes in Law at that time have been taken into account by the Concessionaire;

c. giving evidence as to how the qualifying Change in Law has affected prices charged by similar businesses to the Project, including similar businesses in which the Shareholders or their Associates carry on business;

d. demonstrating to the Authority that the qualifying Change in Law is the direct cause of the increase in costs and/or loss of revenue or delay and the estimated increase in costs or loss in operating cash flows could not reasonably be expected to be mitigated or recovered by the Concessionaire acting in accordance with Good Industry Practice; and

e. demonstrating that any expenditure, which was anticipated to be incurred to replace or maintain assets that have been affected by the qualifying Change in Law, has been taken into account in the amount stated in its notice presented under Clause 15.1.1(a).

15.1.3. If the Parties have complied with clause 15.1.2 and the Parties agree, or it is determined in accordance with clause 21 that the Concessionaire is required to incur additional capital expenditure due to a qualifying

Change in Law that is in excess of Rs. [_____](**10% of the total capital expenditure as Threshold Limit**), then the Concessionaire shall make best endeavors to obtain funding for such capital expenditure on terms reasonably satisfactory to it. The Authority shall bear interest and associated costs incurred above the Threshold Limit to obtain such funding. The Concessionaire shall bear all additional capital expenditure and/or interest and additional costs incurred to obtain any funding to the extent of the Threshold Limit.

15.1.4. If the Concessionaire has made best endeavors to obtain funding for additional capital expenditure, but has been unable to do so within 60 Days of the date on which the agreement or determination occurred, then the Authority shall pay to the Concessionaire an amount equal to the capital expenditure on or before the date falling 30 Days after the capital expenditure has been incurred.

15.1.5. If the Parties have complied with Clause 15.1.2 and the Concessionaire suffers any increase in costs (other than an increase in capital expenditure) or loss in operating cash flows or delay as a result of the occurrence of the qualifying Change in Law, then in the case of increased cost being incurred or reduction in operating cash flows, the Authority shall compensate the Concessionaire for such increased cost or reduced operating cash flows, either by way of a lump-sum payment or by enhancement of the EMI Fee Payment, if applicable, or by any other means that the Parties mutually agree.

15.1.6. The quantum of relief (whether extension of time or compensation) that the Concessionaire shall be entitled to under Clause 15.1.5 shall be as agreed by the Parties or as determined in accordance with Clause 20, provided always that:

a. the Concessionaire shall bear any increased cost or loss of operating cash flow to the extent of the Threshold Limit;

b. the Concessionaire shall only be entitled to relief that is reasonable for such qualifying Change in Law.

15.2. Consequences of Fundamental Change in Law

15.2.1. If a fundamental Change in Law occurs or is shortly to occur, then any of the Parties may notify the others expressing its opinion on:

a. the likely effects of such fundamental Change in Law on the validity and enforceability of this Agreement or on the rights and benefits accruing to the Concessionaire; and

b. the ability of the Parties to re-negotiate the terms of this Agreement to mitigate the effects of such fundamental Change in Law, while adhering to the original commercial and financial positions of the Parties.

15.2.2. As soon as practicable after receipt of any notice from a Party under Clause 15.2.1, the Parties shall meet as often as it may be necessary to re-negotiate and agree on the amendments (including, where necessary severing the invalid or unenforceable terms) of this Agreement.

15.2.3. If the Parties are unable to agree on necessary amendments to the terms of this Agreement to give effect to the original commercial and financial positions of the Parties within a period of 90 (Ninety) Days of the date on which a notice is issued under Clause 15.2.1, then any Party shall be entitled to terminate this Agreement by giving 30 Days' notice.

15.2.4. Upon termination of this Agreement pursuant to Clause 15.2.3, the Authority shall pay the Termination Compensation to the Concessionaire in accordance with Clause 20.1 All other consequences of termination as set out in Clause 20.3 shall apply.

16. Indemnity and Insurance

16.1. Indemnity

16.1.1. Subject to clause 16.1.2, the Concessionaire shall be responsible for, and release and indemnify the Authority and the Authority Related Parties on demand from and against, all liability for:

a. death or personal injury;

b. loss of or damage to property;

c. breach of statutory duty;

d. actions, claims, demands, costs, charges and expenses (including legal expenses), which may arise out of, or in consequence of, the implementation of this Project and any other performance or non-performance by the Concessionaire or any Concessionaire Related Party of its obligations under this Agreement.

16.1.2. The Concessionaire shall not be responsible or be obliged to indemnify the Authority for:

a. any of the matters referred to in paragraphs (c) or (d) of Clause 16.1.1 which arises as a direct result of a Person acting on the instructions of the Authority or the Independent Chartered Engineer; or

b. any injury, loss, damage, cost and expense caused by the negligence or Wilful Default of the Authority, the Independent Chartered Engineer, the Authority Related Parties or by the breach by any of them of their obligations under this Agreement.

16.1.3. The Authority, as the case may be, shall indemnify, defend and hold harmless the Concessionaire against any and all proceedings, actions, third party claim for loss, damage and expense of whatever kind and nature arising out of any act or omission caused by the negligence or Wilful Default of it and the Authority Related Parties.

16.1.4. The Authority shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against it in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified under this Agreement and the reasonable costs and expenses thereof shall be subject to the indemnification obligation of the Concessionaire.

If, however, the Concessionaire acknowledges in writing its obligations to indemnify the Authority in respect of any Loss to the full extent as provided by this Agreement, the Concessionaire shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding at its expense and through a counsel of its choice if it gives prompt notice of its intention to do so to the Authority, and reimburses the Authority, as the case may be, for any reasonable costs and expenses incurred by the Authority prior to the assumption by the Concessionaire of such defence. No Party shall settle or compromise any such claim, action, suit or proceeding without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, the Authority shall have the right to employ their own counsel and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Concessionaire, as and when incurred.

15.1.1. Any indemnity of a Party under any other provisions of this Agreement shall be without limitation to any other

indemnity by that Party under any other provision of this Agreement.

16.2. Insurance

16.2.1. The Concessionaire shall at all times, as may be applicable, obtain, maintain and renew those insurance covers required in relation to people, Equipment, systems and third-party damages in accordance with Applicable Laws, Applicable Permits, Performance Standards and Good Industry Practice. In particular, the Concessionaire shall maintain an insurance coverage against the risk of damage by fire, theft or otherwise (including vandalism) of Equipment until the title to the Equipment passes on to the Authority on the Transfer Date.

17. Force Majeure

17.1. Force Majeure Event

17.1.1. A **Force Majeure Event** means any act, event or circumstance or a combination of acts, events or circumstances or the consequence(s) thereof, which:

a. is/are beyond the reasonable control of any Party (the Affected Party);

b. is/are such that the Affected Party has been unable to overcome or prevent despite exercise of due care and diligence;

c. directly cause the Affected Party to be unable to comply with all or a material part of its obligations under this Agreement;

d. is/ are not the direct result of a breach by the Affected Party of its obligations under this Agreement.

17.1.2. A Force Majeure Event means the following events and circumstances to the extent that they satisfy the conditions set out in Clause 17.1.1

A. Non-Political Event:

a. Acts of God including storm, tempest, cyclone, hurricane, tsunami, flood, whirlwind, lightning, earthquake, washout, landslide, soil erosion, volcanic eruption, or extreme adverse weather or environmental conditions or actions of the elements;

b. fire or explosion caused by reasons not attributable to the Concessionaire or any of the employees or agents of Concessionaire;

c. chemical or radioactive contamination or ionising radiation;

d. loss of or serious accidental damage to the Project, not arising from the Wilful Default of Concessionaire or the Concessionaire Related Parties; or

e. Epidemic or plague.

f. invasion, armed conflict, coup d'état, act of foreign enemy, blockade, embargo, revolution, insurgency, nuclear blast/explosion, politically motivated sabotage, religious strife or civil commotion

g. strikes, lockout, boycotts or other industrial disputes which are not directly attributable to the actions of the Affected Party, but does not include strike or labour unrest that affects the procurement of any Equipment, necessary for the Concessionaire to perform any obligation within the time period specified in the Agreement; or

B. Political Event:

a. Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of clause 15 and its effect.

b. Compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Concessionaire or of the Contractors;

c. unlawful or unauthorized or without jurisdiction revocation of, or refusal to renew or grant without valid cause, any clearance, license, permit, authorisation, no objection certificate, consent, approval or exemption required by the Concessionaire to perform their obligations as defined.

d. hostilities (whether declared as war or not), riot, civil disturbance, revolution, rebellion, insurrection act of terrorism;

e. except to the extent that they constitute remedies or sanctions lawfully exercised by the Authority as a result of any breach of any Applicable Laws or the Applicable Permits by the Concessionaire, the Concessionaire Related Parties or in the case of a national emergency, any action of the Authority whether by positive act, omission or otherwise or other exercise of a sovereign or executive prerogative by the Authority or any Government Authority that results in expropriation, creeping expropriation, nationalization or compulsory acquisition of any property, revenues, assets or rights (present or future, actual or contingent) of the Concessionaire or of the Equity Share Capital held by the Shareholders of the Concessionaire, and acts claimed to be justified by executive necessity, pursuant to which or as a result of which the Concessionaire or its Shareholders are deprived (wholly or in part) of their direct or indirect rights or entitlements under this Agreement.

17.1.3. Without prejudice to the provisions of Clauses 17.1.1 or 17.1.2 above, any act, event or circumstance primarily affecting any of the Concessionaire Related Parties which prevents, impedes or delays the Concessionaire in the performance of its obligations, shall constitute a Force Majeure Event hereunder as to the Concessionaire as appropriate if and to the extent that it is of a kind or character that, if it had directly affected the Concessionaire, would have come within the definition of Force Majeure Event, set out in Clause 17.1.1.

17.1.4. If the Parties are unable to agree in good faith on the occurrence or existence of a Force Majeure Event, such Dispute shall be finally settled in accordance with the Dispute resolution procedure set forth in Clause 21, provided however that the burden of proof as to the occurrence or existence of such Force Majeure Event shall be upon the Party claiming relief and/or excuse on account of such Force Majeure Event.

17.2. Notice of Force Majeure Event

17.2.1. The Affected Party shall give notice to the other Parties in writing of the occurrence of any of the Force Majeure Events (the FM Notice), as soon as it arises or as soon as reasonably practicable and in any event within 10 Days after the Affected Party knew of its occurrence, and of the adverse effect it has or is likely to have on the performance of its obligations under this Agreement, the actions being taken in accordance with Clause 17.5 and an estimate of the period of time required to overcome the Force Majeure Event and/or its nature and effects (if it is possible to estimate the same).

17.2.2. If, following the issue of the FM Notice, the Affected Party receives or becomes aware of any further information relating to the Force Majeure Event, it shall submit such further information to the other Party as soon as reasonably practicable.

17.2.3. Any Party claiming to have been affected by a Force Majeure Event shall not be entitled to any relief unless it has complied with all the provisions of this Clause 17.2.

17.3. Performance Excused

17.3.1. The Affected Party, to the extent rendered unable to perform its obligations or part of the obligation thereof under this Agreement as a consequence of the Force Majeure Event, shall be excused from performance of the obligations provided that the period shall not exceed 120 Days for a Non-Political Force Majeure Event and 90 Days for a Political Force Majeure Event from the date of issuance of the FM Notice. For a Non-Political Force Majeure Event, the performance will be excused on a day-to-day basis, unless otherwise agreed between the Parties.

17.3.2. It is provided however that a Party shall be excused from performance only to the extent reasonably warranted by the Force Majeure Event. It is further provided that, nothing shall absolve the Affected Party from any payment obligation accrued prior to the occurrence of the underlying Force Majeure Event.

17.4. No Liability for Other Losses

17.4.1. Save and except as expressly provided in this Clause 17, no Party shall be liable in any manner whatsoever to the other Parties in respect of any Loss relating to or arising out of the occurrence or existence of any Force Majeure Event or the exercise by it of any right pursuant to this Clause 17.

17.4.2. If a Political Force Majeure Event occurs prior to the Project COD, the Authority shall compensate the Concessionaire for any costs directly incurred as a result of such Political Force Majeure Event, after deducting the proceeds of the insurance received.

17.4.3. This obligation to compensate shall continue only for the period that the Political Force Majeure Event subsists, provided that this obligation shall not exceed 90 Days from the date of issuance of the FM Notice.

17.5. Resumption of Performance

17.5.1. During the period that a Force Majeure Event is subsisting, the Affected Party shall in consultation with the other Parties, make all best efforts to limit or mitigate the effects of such Force Majeure Event on the performance of its obligations under this Agreement. The Affected Party shall also make efforts to resume performance of its obligations under this Agreement a soon as possible and upon resumption, shall notify other Parties of the same in writing. The other Parties shall afford all reasonable assistance to the Affected Party in this regard.

17.6. Termination Due to Force Majeure Event

17.6.1. If, prior to the completion of the 120 Day period (or any extended period) commencing from the date of issuance of the FM Notice, the Parties are of the reasonable view that:

a. Non-Political Force Majeure Event is likely to continue beyond such 120 Days period or any extended period agreed in pursuance of Clause 17.3; or

b. that it is uneconomical or impractical to restore the affected Project, then the Parties may mutually decide to terminate this Agreement, which termination shall take effect from the date on which such decision is taken.

17.6.2. Provided that if it is feasible and practical to restore the Project, the Parties shall equally bear the requisite restoration cost, after applying the insurance proceeds towards restoration.

17.6.3. Without prejudice to the provisions of Clause 17.6.1, the Affected Party shall, after the expiry of the period of 120 Days or any other mutually extended period, be entitled to forthwith terminate this Agreement in its sole discretion by issuing a notice to that effect.

17.6.4. Upon termination of this Agreement pursuant to this Clause 17.6.2, the consequences of termination as are set out in Clause 20 shall apply.

18. Events of Default

18.1. **Event of Default** means a Concessionaire Event of Default or an Authority Event of Default or both, as the case may be.

A. Concessionaire Event of Default:

Concessionaire Event of Default means any of the following events arising out of any acts or omissions of the Concessionaire and which have not occurred as a consequence of any Authority Event of Default, a qualifying Change in Law, a fundamental Change in Law, a Force Majeure Event or an Emergency and where the Concessionaire has failed to remedy the defects specified in the Preliminary Notice issued in accordance with Clause 19.1(b):

a. any abandonment by the Concessionaire;

b. any breach by the Concessionaire of its obligations under this Agreement which has a material adverse effect on the ability of the Concessionaire to install the Equipment or perform the O&M services;

c. any representation made or warranty given by the Concessionaire under this Agreement being false or misleading;

d. failure of the Concessionaire to achieve Project COD within 8 months of the Execution Date which can be extendable by 2 months with Liquidated Damages as per Schedule 6 of this Concession Agreement;

e. failure of the Concessionaire to issue and maintain a valid Performance Security under clause 11;

f. failure of the Concessionaire to comply with the O&M standards set out in Schedule 3 for a continuous period of 30 Days;

g. a resolution for voluntary winding up passed by the Shareholders;

h. the Concessionaire entering into liquidation or similar state or if any order is made for the compulsory winding up or dissolution of the Concessionaire or the appointment of a receiver or administrator in respect of the Concessionaire, its business and assets or any re- structuring, re-organisation, amalgamation, arrangement or compromise affecting the Concessionaire's ability to fulfil its obligations under this Agreement or that otherwise has or may have a material adverse effect; or

i. the Concessionaire's failure to issue monthly reports in accordance with Clause 8.

j. If the Energy Savings falls below 40% as per the Schedule-5.

B. Authority ‘s Events of Default:

Authority’s Event of Default means any of the following events, unless such event has occurred as a consequence of the Concessionaire Event of Default, a qualifying Change in Law, a fundamental Change in Law, a Non-Political Force Majeure Event or an Emergency and where Authority has failed to remedy the defects specified in the Preliminary Notice issued in accordance with Clause 19.2(b)

a. failure of the Authority to pay the EMI Fee payment and more than 150 Days have elapsed since such payments became due;

b. failure of the Authority to fund the Escrow Account in accordance with Clause 9.2.1 (a);

c. any breach by the Authority of its obligations under this Agreement which has a marterial adiverse effect on the performance of the Concessionaire's obligations under this Agreement; or

d. any representation made or warranty given by the Authority under this Agreement which is found to be false or misleading.

19. Termination

19.1. Termination for Concessionaire Event of Default

a. Without prejudice to any other right or remedy which Authority may have in respect thereof under this Agreement, upon the occurrence of a Concessionaire Event of Default as defined in clause 18.1(a), the Authority shall be entitled to terminate this Agreement in the manner provided in Clause 19.1(b).

b. The Authority shall issue a Preliminary Notice to the Concessionaire providing 45 (forty-five) Days to cure the underlying Concessionaire Event of Default. If the Concessionaire fails to cure the underlying Concessionaire Event of Default within such period allowed, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Concessionaire and to invoke the Performance Security, if subsisting.

19.2. Termination for Authority Event of Default

a. Without prejudice to any other right or remedy which the Concessionaire may have in respect thereof under this Agreement, upon occurrence of an Authority Event of Default as defined in clause 18.1.(b), the Concessionaire shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority.

b. The Concessionaire shall issue a Preliminary Notice to the Authority, providing 45 (forty-five) Days to remedy/cure the underlying Authority Event of Default. If, however, Authority fails to cure the underlying Authority Event of Default within such period allowed, the Concessionaire shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority.

The Preliminary Notice shall be issued under this Agreement only for the Events of Default for which a cure period has been prescribed in the Agreement.

19.3. Termination Notice

The Termination Notice shall set out the following:

a. the underlying Event of Default, in sufficient detail;

b. the Termination Date;

c. the Termination Compensation as calculated in accordance with Clause 20; and

d. any other relevant information.

19.4. Obligation of the Parties

Following issue of the Termination Notice by the Authority or the Concessionaire, as the case may be, shall promptly take all such steps as may be necessary or required to ensure that:

a. until termination, the Parties shall, to the fullest extent possible, discharge their respective obligations so as to maintain the continued performance of O&M Services, if commenced;

b. the Project public street lighting system, along with the Equipment is handed back to the Authority on the Termination Date in accordance with Clause 19.6; and

c. any Termination Compensation is paid to the Concessionaire in accordance with Clause 20.

19.5. Deleted

19.6. Consequences of Termination

Upon termination of this Agreement, the Authority shall:

a. take possession and control of the Project public streetlighting system;
b. take possession and control of all the Equipment;
c. take possession and control of the Concessionaire's control room and call center;
d. restrain the Concessionaire and any Person claiming through or under the Concessionaire from entering the Concessionaire's control room and call center;
e. in the event of Concessionaire Event of Default, forfeit the Performance security; and
f. in the event of an Authority Event of Default, return the Performance Bank Guarantee, and pay the Termination Payment compensation.

19.7. Accrued Rights and Liabilities

19.7.1. Notwithstanding anything to the contrary contained in this Agreement, any termination of this Agreement pursuant to its terms shall be without prejudice to accrued rights of any Party, including its right to claim and recover damages and other rights and remedies which it may have in law or contract. All accrued rights and obligations of any of the Parties under this Agreement, including, all rights and obligations with respect to Termination Compensation, shall survive the termination of this Agreement to the extent such survival is necessary for giving effect to such rights and obligations.

19.8. Voluntary Termination

19.8.1. The Authority shall, in addition to any of its other rights to terminate this Agreement, have the right to terminate this Agreement at any time by giving a 60 Days' notice to the Concessionaire. In such event the Concessionaire shall be entitled to the Termination Compensation in accordance with Clause 20.1.

19.9. Authority's Step-In Rights

19.9.1. For the purposes of providing the O&M Services during the cure period applicable to any Concessionaire Event of Default, the Authority shall have the right to enter the Concessionaire's control room and call center and take over the Project public street lighting system upon giving not less than 12 hours advance notice to the Concessionaire (Authority's Step-In Right). The Authority may continue to exercise the Authority's Step-In Right until the Concessionaire has remedied the Concessionaire Event of Default and demonstrated to the reasonable satisfaction of Authority its readiness and ability to resume the provision of the O&M Services in accordance with the terms and conditions of the Agreement.

19.9.2. In exercising the Authority 's Step-In Right, the Authority shall: (a) cause the O&M Services to be provided by an adequate number of sufficiently qualified personnel; (b) use commercially reasonable efforts to continue to perform all of the Concessionaire's obligations under this Agreement; and (c) have no obligation to pay the Concessionaire the EMI Fee Payments during the period such Authority's Step-In Right is being exercised. During the exercise of the Authority 's Step-In Right, the Concessionaire shall: (a) cooperate in all respects with the Authority; and (b) to the extent requested by the Authority, assign its rights capable of

being assigned under all Applicable Permits, this Agreement and any other contracts and relevant documents to the Authority during the period that the Authority is exercising the Authority 's Step-In Right.

19.9.3. The exercise by the Authority of the Authority 's Step-In Right shall not affect any other right or remedy the Authority may have, nor shall the existence of the Authority 's Step-In Right or its exercise thereof relieve the Concessionaire of any duty, obligation or liability under the Agreement or any other contract.

20. Compensation on Termination

20.1. For Authority Event of Default or For Political Force Majeure Event

20.1.1. In the event that the Termination Compensation is payable by the Authority to the Concessionaire upon termination of this Agreement due to an Authority Event of Default or a Political Force Majeure Event, then the Termination Compensation shall be:

Total investment done by the Concessionaire which includes LEDs, CCMS, Smart meters, and other equipment installed up to the Termination Date, upon submission of invoices duly certified by the ICE and Engineer-in Charge.

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a. the amounts, if any, due to the Authority from the Concessionaire under the provisions of this Agreement;

b. Total capital expenditure recovered, as a part of the EMI Fee paid by the Authority to the Concessionaire, if any; and

c. the amount realized, if any, from the insurance proceeds, unless utilized for restoration of the installed Equipment.

20.2. For Concessionaire Event of Default

20.2.1. Upon termination of this Agreement due to a Concessionaire Event of Default anytime during the period between execution of the Agreement and the Termination Date, the Authority shall have the right to draw upon the entire amount of the Performance Security submitted by the Concessionaire;

20.3. Payment of Termination Compensation

20.3.1. The Termination Compensation pursuant to this Agreement shall become due and payable to the Concessionaire by the Authority within 30 (thirty) Days of a demand being made by the Concessionaire with the necessary particulars duly certified by an independent auditor. The Termination Compensation shall be paid by the Authority only upon transfer of the Project in accordance with clause 23.

20.3.2. If for any reasons other than those attributable to the Concessionaire, the Authority fails to pay the Termination Compensation on the date due, the Authority shall be liable to pay default interest on the Termination Compensation in accordance with clause 12.3, payable annually from such due date until the payment thereof.

21. Dispute Resolution

21.1. Dispute Settlement Procedure

A. LEVEL - 1

The rationale of amicable settlement should be followed to settle the disputes at the lowest possible level of responsibility by bringing the individuals concerned face to face, Project Manager/Authorized Signatory of the Concessionaire and Chief Engineer(Ele), BRUHAT BENGALURU MAHANAGARA PALIKE can raise dispute. The Chief Engineer(Ele), BRUHAT BENGALURU MAHANAGARA PALIKE and the Project Manager/ Authorized Signatory as representatives of the Concessionaire for the Project may try to settle the dispute amicably.

If the dispute is not settled at the above said level within 15 days, then the matter shall be tried to be solved by authorized representatives of the Concessionaire and the Special Commissioner(Project) BBMP.

If the dispute is not settled as indicated above within 15 days and same can be extended for 15 days with the consent of both the parties but should not exceed 30 days as and when the dispute arises within the contract period.

B. LEVEL - 2

If the Concessionaire is not satisfied with the decision or order passed in the Meeting with Special Commissioner(Project) BBMP, the matter shall be referred to the Chief Commissioner, BBMP within 14 days from the decision taken by Special Commissioner(Project) BBMP and same can be extended for 15 days with the consent of both the parties. The Chief Commissioner, BBMP shall try to settle the issue amicably within 30 days from the date receipt of notification of a dispute referred by the Concessionaire.

C. LEVEL - 3

Only after Exhausting of the above Level-1 and Level-2 amicable settlement, then only the parties have got liberty to settle the dispute in accordance to the 'Arbitration Clause', Vide GoK Circular No: LAW 273 L AC 2012(p), dated: 10-01-2014,

"Any dispute or difference or claim arising out of, or in connection with, or relating to the present contract or the breach, termination or invalidity thereof shall be referred and settled under Arbitration Centre- Karnataka (Domestic and International) Rules 2012, by one or more arbitrators appointed in accordance with its rules.

22. Representation and Warranties

22.1. The Concessionaire represents and warrants to the Authority that:

a. it is duly organized, validly existing and in good standing under the laws of India and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;

b. it has full power and authority to execute, deliver and perform its obligations under this Agreement;

c. it has taken all necessary actions to authorize the execution, delivery and performance of this Agreement;

d. this Agreement constitutes the legal, valid and binding obligation of the Concessionaire, enforceable against it in accordance with the terms hereof;

e. there are no actions, suits or proceedings pending or to its best knowledge, threatened against or affecting it before any court, administrative body or arbitral tribunal which might materially and adversely affect its ability to meet or perform any of its obligations under this Agreement;

f. it has the financial standing and capacity to undertake the Project in accordance with the terms of this Agreement;

g. the execution, delivery and performance of this Agreement does not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and the articles of association, charter documents/bye-laws, or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;

h. it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Authority which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

i. it has complied with Applicable Laws in all respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a marterial adverse effect on its ability to perform its obligations under this Agreement;

j. all its rights and interests in the Project shall pass to and vest in the Authority on the Transfer Date, free and clear of all Encumbrances, without any further act or deed on its part or that of Authority, subject to any agreement under which any Encumbrance is retained by any Person, save and except as expressly provided in this Agreement;

k. no representation or warranty made by it contained herein or in any other document furnished by it to

the Authority including the Bid or to any Government Authority in relation to Applicable Permits contains or shall contain any untrue or misleading statement of material fact or omits or shall omit to state a material fact necessary to make such representation or warranty not misleading;

l. no sums, in cash or kind, have been paid or shall be paid, by it or on its behalf, to any Person by way of fees, commission or otherwise for securing the award of this Project or entering into this Agreement or for influencing or attempting to influence any officer or employee of Authority or the Authority Related Parties in connection therewith;

m. agrees that the execution, delivery and performance by it of this Agreement and all other agreements, contracts, documents and writings relating to this Agreement constitute private and commercial acts and not public or government acts; and

n. consents generally in respect of the enforcement of any judgment against it in any proceedings in any jurisdiction to the giving of any relief or the issue of any process in connection with such proceedings; [and]

22.2. The Authority represents and warrants to the Concessionaire that:

a. it is duly organized, validly existing and in good standing under the laws of India;

b. it has full power and authority to execute, deliver and perform its obligations under this Agreement;

c. it has taken all necessary action to authorize the execution, delivery and performance of this Agreement;

d. this Agreement constitutes the legal, valid and binding obligation of the Authority, enforceable against it in accordance with the terms hereof; and

e. there are no actions, suits or proceedings pending or to its best knowledge, threatened against or affecting it before any court, administrative body or arbitral tribunal which might materially and adversely affect its ability to meet or perform any of its obligations under this Agreement.

22.3. In the event that any occurrence or circumstance comes to the attention of a Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Parties of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any obligation of a Party under this Agreement.

22.4. Neither the Authority nor any of its agents or employees shall be liable to the Concessionaire in contract, tort, including negligence or breach of statutory duty, statute or otherwise as a result of:

a. any inaccuracy, omission, unfitness for any purpose or inadequacy of any kind whatsoever in the information relating to the Project disclosed by the Authority to the Concessionaire and/or the selected Bidder; or

b. any failure to make available to the Concessionaire any materials, documents, plans or other information relating to the Project.

23. Transfer

23.1. General Scope of Transfer/Payment

23.1.1. The transactions to be consummated and the formalities to be completed by the Authority and the Concessionaire on the Transfer Date are set out in Clauses 23.2 and 23.3.

23.2. Concessionaire's Obligations

The Concessionaire, at no cost to the Authority, shall:

a. hand over peaceful possession of the Project public streetlight system and the Equipment, along with the control room and the call center, free of Encumbrances and in a condition which is fit for the purpose;

b. transfer all its rights, titles and interests in the assets comprised in the Project and the O&M services which are required to be transferred to the Authority in accordance with this Agreement and execute such deeds and documents as may be necessary for the purpose and complete all legal or other formalities required in this regard;

c. hand over to the Authority all documents including manuals and records relating to the O&M services;

d. transfer technology and up-to-date know-how relating to the O&M services;

e. transfer or cause to be transferred to the Authority any agreements relating to the Project which are (i) valid and subsisting; and (ii) capable of being transferred to the Authority; and those agreements that Authority has chosen to take over, and cancel or cause to be cancelled such agreements relating to the Project not transferred to the Authority. For this purpose, the Concessionaire shall ensure that all agreements relating to the Project are assignable in favour of the Authority without any further action on part of the respective counterparties. The Concessionaire shall entirely at its cost, terminate all such agreements relating to the Project which are not transferred/assigned and/or are not required to be transferred/assigned to the Authority;

f. transfer to the Authority all such Applicable Permits which the Authority may require and which can be legally transferred;

g. remove within 90 Days from expiry of the Term or upon termination of this Agreement, from the Project public street lighting system, any moveable assets that are not taken over by or not to be transferred to the Authority in terms of the provisions of this Agreement;

h. ensure that the Project continues to meet the standards set out at Schedule 3 on the Transfer Date;

i. comply with all other requirements as may be prescribed under Applicable Laws to complete the divestment and assignment of all its rights, title and interest in the Project free from all Encumbrance and Taxes payable on or before the Transfer Date.

23.3. Authority 's Obligations

23.3.1. Except in the event of expiry of the Project by efflux of time, the Authority shall pay compensation payable to the Concessionaire in accordance with clause 20 to the Concessionaire. The Concessionaire confirms that upon such payment being made, the Authority shall stand duly discharged of its obligations regarding payment of compensation under this Agreement.

23.3.2. The Concessionaire further confirms that payment of compensation by the Authority in accordance with Clause 20 shall be a valid discharge of the Authority's obligation to compensate the Concessionaire under this Agreement.

23.4. Vesting Certificate

23.4.1. Upon the Authority and the Concessionaire fulfilling their obligations, as set out in Clause 23.2 and Clause 23.3, respectively, the Authority shall issue a certificate in the form set out at Annex 3 (Vesting Certificate) which shall have the effect of constituting evidence of divestment of all rights and title of the Concessionaire in the Project and their vesting in the Authority. The divestment of all rights and title in the Project shall be deemed to be complete on the date of issue of the Vesting Certificate.

23.5. Divestment Cost

23.5.1. The Concessionaire shall bear and pay all costs incidental to divestment of all the rights, title and interest of the Concessionaire in the Project in favour of the Authority on the Transfer Date.

23.6. Risk

23.6.1. Until transfer in accordance with this clause 23, the Project shall remain at the sole risk of the Concessionaire except for any loss or damage caused to or suffered by the Concessionaire due to any act or omission or negligence on the part of the Authority under this Agreement.

24. Miscellaneous Provisions

24.1. Survival of Obligations

24.1.1. Any cause or action which may have occurred in favour of a party or any right which is vested in a Party under any of the provisions of this Agreement during the period between the Execution Date and the Transfer Date as a result of any act, omission, deed, matter or thing done or omitted to be done by a Party before the expiry of the Term by efflux of time or otherwise in accordance with the provisions of this Agreement, shall survive the expiry of this Agreement.

24.2. Entire Agreement

24.2.1. The Parties hereto acknowledge, confirm and undertake that this Agreement constitutes the entire understanding between the Parties regarding the Project and supersedes all previous written or oral representations and/or arrangements regarding the Project.

24.3. Clauses to Survive Termination

24.3.1. The provisions of this Agreement, including clause 20, clause 21, clause 22, clause 23 and clause 24, to the fullest extent necessary to give effect thereto, survive the term of this Agreement/ the termination of this Agreement and the obligations of Parties to be performed/ discharged following the termination of this Agreement, shall accordingly be performed/discharged by the Parties.

24.4. Non-exhaustive Remedies

24.4.1. Save and except as provided in this Agreement, the remedies available to the Parties under this Agreement are not exhaustive and Parties shall be entitled to all other rights and remedies and to take all actions in law and in equity in addition to the remedies provided for herein.

24.4.2. Save and except as provided in this Agreement, the exercise of any rights by a Party under this Agreement, shall not preclude such Party from availing any other rights or remedies that may be available to it under this Agreement or under any other agreement executed in relation to the Project. All remedies available to the Parties shall be cumulative and the exercise or failure thereof of one or more remedies by any Party shall not limit or preclude the exercise of or constitute a waiver of any other remedies by such Party.

24.5. Notices

a. Any notice or request in reference to this Agreement shall be written in English language and shall be sent by registered airmail or facsimile and shall be directed to the other Party at the address mentioned below:

Authority:	Attention:	[●]
	Address :	[●]
	Tel:	[●]
	Fax:	[●]

Email: [●]

Concessionaire: Attention: [●]
Address : [●]
Tel: [●]
Fax: [●]
Email: [●]

b. Any notice or demand served by registered airmail shall be deemed to be duly served 24 hours after posting and a notice or demand sent by facsimile shall be deemed to have been served at the time of its transmission and in proving service of the same it shall be sufficient to prove, in the case of a letter, that such letter was sent by registered airmail, addressed and placed in the post and in the case of a facsimile transmission, that such facsimile was duly transmitted to a current facsimile number of the addressee at the address referred above.

c. Each Party may change the above address by prior written notice to the other Parties.

24.6. Governing Law and Jurisdiction

24.6.1. This Agreement shall be governed by the laws of India and subject to the exclusive jurisdiction of the courts at Bengaluru.

24.7. Counterparts

24.7.1. This Agreement shall be executed in 2 counterparts, each of which, when executed and delivered, shall be an original, and all two counterparts together shall constitute one and the same instrument.

24.8. Language

24.8.1. The formal text of this Agreement and any other agreement executed in relation to the Project shall be in the English language.

24.8.2. All notices and communications between the Authority and the Concessionaire required under this Agreement shall be in English.

24.9. Confidentiality

24.9.1. No receiving Party shall, without the prior written consent of the disclosing Party, at any time divulge or disclose or suffer or permit its representatives to divulge or disclose to any Person or use for any purpose unconnected with the Project any Confidential Information during the Project period and for a period of 5 years after the Expiry Date or the Termination Date, as the case may be, except to its representatives officers, directors, advisors, Authority's agents, contractors and Associates who have a legitimate need to know the Confidential Information in order to perform their duties relating to this Agreement.

24.9.2. This Clause 24.9 shall not apply to Confidential Information which:

a. at the time of disclosure or thereafter has become part of public knowledge or literature without a breach of this Agreement;

b. is already in the possession of the Party receiving such Confidential Information before it was received

from any other party and which was not obtained under any obligation of confidentiality from the Party which disclosed such information;

c. was obtained from a third party, other than one disclosing it on behalf of a Party who was free to divulge the same and who was not under any obligation of confidentiality in relation to such Confidential Information to Party, which disclosed the information;

d. is required to be disclosed pursuant to any legal and mandatory requirement of any court, legislative or administrative body or any Government Authority, or the rules of any applicable stock exchange;

e. is disclosed by the Concessionaire to its Associates or the permitted assignees and transferees of the same;

f. is disclosed by the Concessionaire to a Concessionaire Related Party;

g. is disclosed to actual prospective insurers, re-insurers and insurance brokers;

h. is disclosed to any professional advisors or contractors or consultants of any Persons to whom a Party is entitled to disclose Confidential Information under this Clause 24.9;

i. is disclosed to any Person in connection with Clause 24.9;

j. is independently developed by the receiving Party without reliance on the Confidential Information disclosed by the disclosing Party; or

k. is disclosed to any Government Authority or any other body in any relevant jurisdiction in connection with the obtaining of renewal of any approval, license, permit or consent required hereunder or for the Project.

24.9.3. It is clarified that the Party making a disclosure of Confidential Information pursuant to (v) and(viii) (inclusive) above shall ensure that any Person to whom it makes such disclosure undertakes to hold such Confidential Information subject to obligations of confidence equivalent to those set out in this Clause 24.9.

24.9.4. A Party making a disclosure of Confidential Information pursuant to Clause 24.9(a) shall:

a. at the time of making such disclosure inform its representatives and Associates of their obligation of confidentiality pursuant to this Agreement and ensure their compliance; and

b. be liable for any breach of such obligations by such representatives and Associates.

24.9.5. In the event that a Party is required or requested to make a disclosure of Confidential Information referred to in Clause 24.9(b)(v), such Party shall prior to such disclosure to the extent permissible by Applicable Laws use its best efforts to promptly notify the disclosing Party or its Associate so that appropriate protection order and/or other action can be taken if possible. In the absence of such a protection order restricting disclosure, the Party required to make such disclosure may disclose only that portion of the Confidential Information which it is legally required to disclose and shall use best efforts to obtain assurances that confidential treatment shall be accorded to the Confidential Information.

24.9.6. The receiving Party agrees that it, its Associates and representatives shall, upon request by the disclosing

Party promptly:

a. return, and use all best endeavors to ensure that any third party to whom the recipient Party has disclosed the Confidential Information pursuant to this Agreement shall return, all the Confidential Information that is in tangible form, including, without limitation, Confidential Information contained on computer disks or other electronic storage media or devices, furnished, together with any copies or extracts thereof; and

b. destroy, and use all best endeavors to ensure that any third party to whom the receiving Party has disclosed the Confidential Information pursuant to this Agreement shall destroy, all analyses, compilations, studies or other documents which have been prepared and which reflect or refer to any Confidential Information,

provided that the receiving Party shall be entitled to retain such Confidential Information which forms part of the permanent records of the receiving Party or its Associates and which was prepared for the purposes of the review or decision-making process of the receiving Party or such Associates and/or which the recipient party or its Associates is required to retain by law or the rules of any Government Authority if it continues to keep such Confidential Information confidential in accordance with this Agreement

24.10. Amendments

24.10.1. Any provision of this Agreement may be amended, supplemented or modified only by an agreement in writing signed by the Parties.

24.10.2. A Party may at any time request the other to enter into discussions to review the operation of any part of this Agreement and, but without commitment by a Party, to determine whether it should be amended by mutual agreement provided that, unless there is such mutual agreement, the provisions of this Agreement, as then most recently, if at all, amended, shall continue to apply whatever the outcome of any such discussions or review and whether or not any such discussions or review take place.

24.11. Waivers and Consents

24.11.1. Any provision or breach of any provision of this Agreement may be waived before or after it occurs only if evidenced by an agreement in writing signed by the Parties.

24.11.2. Any consent under or pursuant to any provision of this Agreement must also be in writing and given prior to the event, action or omission for which it is sought.

24.11.3. Any such waiver or consent may be given subject to any conditions thought fit by the Person giving it and shall be effective only in the instance and for the purpose for which it is given.

24.12. Severability

24.12.1. If at any time any provision of this Agreement is or becomes illegal, invalid or unenforceable in any respect under any law of any jurisdiction, neither the legality, validity or enforceability of the remaining provisions nor the legality, validity or enforceability of such provision under the law of any other jurisdiction shall, in any way, be affected or impaired and the legality, validity and enforceability of the remainder of this Agreement

shall not be affected.

24.12.2. The Parties shall negotiate in good faith with a view to agree on one or more provisions which may be substituted for any such invalid, illegal or unenforceable provision and which are satisfactory to them and produce as nearly as is practicable in all the circumstances the appropriate balance of the commercial interests of the parties.

24.13. Costs and Expenses

24.13.1. Each Party shall be responsible for paying its own costs and expenses incurred in connection with the preparation and execution of this Agreement.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE SET THEIR HANDS AND SEAL TO THESE PRESENTS ON THE DAY, MONTH & YEAR FIRST ABOVE WRITTEN IN PRESENCE OF THE FOLLOWING WITNESSES:

SIGNED, SEALED & DELIVERED

FOR AND ON BEHALF OF Authority

(Authorized Signatory)

FOR AND ON BEHALF OF [Selected Bidder/ Concessionaire]

(Authorized Signatory)

Witnesses: 1:

2:

Schedules

SCHEDULE – 1 EXISTING STREETLIGHTS UNDER THE PROJECT

Rating and type of existing streetlights proposed for replacement under the scope of services of the Concessionaire in BRUHAT BENGALURU MAHANAGARA PALIKE is provided in the table below;

S.No	Lamp Type	Rated Wattage(Watts)	Quantity(no's)
A.1	**East Zone Existing Conventional Lights**		
1	SV250W	250	1643
2	MH400W	400	85
3	SV400w	400	50
4	TL40W	40	5
5	MV125W	125	61
6	MH250W	250	4
7	SV250W	250	3103
8	MH400W	400	364
9	MH250W	250	1
10	TL40W	40	102
11	MV125W	125	91
12	SV400w	400	0
13	SV250W	250	27594
14	MH400W	400	501
15	SV400w	400	80
16	MH250W	250	47
17	TL40W	40	282
18	MV125W	125	1691
19	SV250W	250	9965
20	MH400W	400	172
21	SV400w	400	17
22	TL40W	40	46
23	MH250W	250	17
24	MV125W	125	1017
Total-A.1			**46,938**
A.2	**Bommanahalli Partial Zone Existing Conventional Lights**		
1	HPSV250W	250	35
2	HPSV250W	250	4051
3	FTL/CFL40W	40	173
4	HPSV250W	250	631
5	FTL/CFL40W	40	31
6	FL250W	250	1
7	HPSV250W	250	13994
8	FTL/CFL40W	40	272
9	HPSV70W	70	14
10	FL250W	250	2
11	HPSV250W	250	8
12	FTL/CFL40W	40	15
13	MV125W	125	382
14	FL250W	250	3
15	FL250W	250	444
16	FL400W	400	114
17	FL250W	250	15
Total-A.2			**20185**
TOTAL CONVENTIONAL LIGHT A.1+1.2			**67,123**

A.3	East Zone Existing LED Street Lights		
1	LED 24W	24	2068
2	LED 65W	65	9035
3	LED 90W	90	16415
4	LED 120W	120	6468
5	LED150WFL	150	1444
6	LED240WFL	240	298
Total-A.3			**35,728**
A.4	**Bommanahalli Partial Zone Existing LED Street Lights**		
1	LED 90W	90	3545
2	LED 120W	120	546
3	LED 65W	65	3247
4	LED 30W	30	6304
5	LED 24W	24	126
6	LED24WPT	24	1262
7	FL LED150W	150	187
8	FL LED200W	200	42
Total-A.4			**15,259**
TOTAL EXISTING LED LIGHTS A.3+A.4			**50,987**

A.5	East Zone Empty Poles Proposed LED Street Lights		
1	LED	120	233
2	LED	90	436
3	LED	65	3924
4	LED	40	1462
5	LED(FL)	200	149
6	LED (FL)	120	9
Total–A.5			**6,213**
A.6	**Bommanahalli Partial Zone Empty Poles Proposed LED Street Lights**		
1	LED	120	11
2	LED	90	1280
3	LED	65	200
4	LED	40	4449
5	LED (FL)	200	34
6	LED (FL)	120	141
Total–A.6			**6,115**
TOTAL EMPTY POLES A.5+A.6			**12,328**
Grand Total=A.1+A.2+A.3+A.4+A.5+A.6			**1,30,438**

Note:

1. Each conventional Flood light fixture in the high mast comprises of multiple lamps. Quantity of LED flood Light fixtures proposed is equal to quantity of conventional Flood light fixtures
2. All the existing LED lights in corporation limits are not having any guarantee/warranty period from OEM as on bidding date.

SCHEDULE – 2 SCOPE OF SERVICES

As from the Execution Date and throughout the Term, the Concessionaire shall carry out the following key activities:

1. **Asset database**: Switching point- wise verification and marking of assets which are newly added into the street lighting system post detailed survey and creation and maintenance of asset database during the Term of the Project;

    i. Concessionaire jointly with the Authority, shall carry out the asset verification and creation of detailed asset register providing switching point wise details of energy billing meter or connection number, feeder panel, switching, protection, communication and control equipment, road type, pole number, capturing GIS coordinates of poles, pole spacing/ span, pole type, pole height, conductor/ cable ratings, earthing systems, fixture height, Bracket/Arm/Clamps, existing fixture type, rating & numbers for particular pole etc.

    ii. Undertaking asset marking/ pole painting exercise as and where required; and

    iii. Creation of equipment replacement, manpower deployment and installation plan including proposals for feeder panels, conductor/ cable, poles, proposed LED fixture configurations with complete detailing up to switching point and individual pole number level.

    The Equipment Installation and Manpower Deployment Plan jointly prepared by the Concessionaire and the Authority shall be duly certified/ approved by the Independent Chartered Engineer.

    It is the responsibility of the authority to make sure the presence of the dedicated streetlight phase, common neutral, underground cable and installation of poles wherever required for the smooth execution of the project. During the initial stage of the project the concessionaire will do the survey to identify these gaps and notify to the authority.

    Authority holds responsibility If damage occurs to the parts of high mast like, motor, winch, ropes, carriage during the implementation period of Project. Authority will rectify the issues if any from the existing contractor before termination of the contract

2. **Equipment Installation and Manpower Deployment Plan**

    i. As per Equipment Installation and Manpower Deployment Plan approved by Independent Chartered Engineer, Concessionaire has to supply, install and commission the LED Luminaires, switching/feeder panels and other accessories and infrastructure like earthing electrodes, earthling strips, outreach arms (where ever required) etc. as part of replacement at existing locations, after removal of conventional streetlights and also should provide the details of manpower to be deployed as appropriate.

    ii. **Insurance:** The goods supplied by Concessionaire shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery,

completion of installation and commissioning as brought out in Equipment Installation Plan. For delivery of goods at site, the insurance shall be obtained by the Concessionaire, for an amount not less than the price of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including war risks and strikes.

iii. The released existing street lighting equipment's / Luminaries would be stored and disposed as per safety and environmental norms by Concessionaire during execution of the Project.

iv. The specifications of the LED Luminaires have been provided under Schedule 3 of this Agreement.

3. Conditions applicable for serial number 1 & 2 above

i. All the tools and plants, including testing and measuring instruments required for implementation of the Project is to be arranged by the Concessionaire.

ii. Storage for supplies and dismantled Luminaires till such time they are consumed on site is in the scope of Concessionaire. The Concessionaire shall carry out marking of poles (missing pole numbering), in line with the recommended nomenclature by the Authority.

iii. The Concessionaire shall ensure proper record of the LED Luminaires installed and conventional fixtures dismantled, duly certified by Authority Representatives on DAILY BASIS. This shall include the pole identification along with Luminaire serial number for each of the poles and details of associated switching Point/ feeder panel. This shall include the details of dismantled conventional fixtures, acknowledged by Authority Representatives.

iv. The Concessionaire shall carry out minor rectification works wherever necessary for proper and reliable operation of the LED Luminaire.

4. The Concessionaire shall provide to the Authority copies of warranty for Luminaires and components therein, to be installed in the Project. Such warranty shall necessarily ensure the following:

i. Warranty shall be applicable for at least seven (7) years from the date of Project COD

ii. The Concessionaire shall replace the aforementioned components, in the event of their failure/non- performance, within TWENTY-FOUR (24) hours.

iii. Such replacement in (ii) above shall be done at the sole cost of the Concessionaire and shall not have any right to claim for reimbursement from the Authority.

5. Operation & Maintenance of public street lighting system installed over the Project Term

i. Establishment of a Centralized Control and Monitoring System (CCMS) for remote operation and monitoring of the entire population of handed over street lighting; such CCMS shall also host a call center facility for logging and tracking resolution of citizen complaints regarding street lighting;

a. A complaint management system preferably web-based tool shall be utilized for complaint management (registration, inspection, planning, resolution and monitoring of complaints). Concessionaire shall provide login access to the Authority for review of the complaint handling process.

b. The Concessionaire shall be required to make the call center numbers publicly available and may display the same at location of high masts or other switching points.

c. Identification of faulty/ non-glowing fixtures through analysis of remote data from feeder panels and/or from complaints lodged by citizens, Authority's personnel, Ward inspection etc.

ii. Undertake operations (including daily switching on and switching off), monitoring, predictive and planned maintenance activities for the public street lighting system.

iii. Ensuring that the public street lighting system is operated and maintained with adequate control systems and associated IT infrastructure.

iv. Undertaking repair and maintenance activities on the street lighting systems falling within the scope of the Project:

a. Repair/ rectification/ replacement of defective components of Luminaires or entire Luminaire to restore LED Luminaire to glowing condition, in accordance with the technical parameters specified in this Agreement, including supply of all materials required for the same. This shall include all activities involved for the restoration including associated wiring connections up to supply tap-off.

b. The Concessionaire to ensure that all non-glowing LED Luminaires are brought to glowing condition within a period as specified in this Agreement.

c. In case, non-availability of power supply, the same should be intimated in writing to the Authorized Representative of the Authority within 24 hours of registration of complaint.

v. **Replacement of Luminaires/ components in case of theft:** The Concessionaire shall ensure the security of its Luminaires and components and in the event of any theft of the Luminaires or the components, the Concessionaire shall be responsible for arranging a replacement at its own cost and without any reimbursement from the Authority within minimum possible duration.

vi. Periodic cleaning of Luminaire cover/ glass etc. to minimize reduction in illumination on the account of fouling of cover glass.

vii. Deployment of qualified/ trained personnel for manning of CCMS and undertaking various other monitoring, inspection, maintenance, repair, replacement, citizen complaints handling related activities to achieve minimum uptime as specified in this Agreement for street lighting systems covered in the Project, excluding the period of non-availability of power supply.

viii. Daily, weekly and monthly reporting on citizen complaints, operating status, replacement/ repair activities, energy consumption etc. of the public street lighting system.

ix. Deployment of hydraulic crane/s and other tools and equipment. The Concessionaire has to ensure that no work is held up due to non-availability of crane/s, ladder/s, otherwise the Concessionaire will be held responsible for such delays.

x. Insurance, during the Project Term against any damage or malfunctioning of LED Luminaires along with accessories on account of lightning strike, explosions, damage, riot, strike and malicious damage, storm, cyclone, typhoon, tempest, hurricane, tornado, flood and inundation, impact damages, subsidence and landslide including rock slide, bursting and / or overflowing of water tanks, apparatus and pipes, earth quakes, vandalism, theft or any other causes beyond the control of Authority.

6. To ensure compliance with all safety standards and fulfil all the statutory obligations in respect of the deputed staff at its own cost during the Term of the Project;

i. During the period of installation and the Term of this Agreement, the Concessionaire shall ensure implementation of measures to ensure safety of working personnel, as per all applicable laws in general and with specific focus on working at heights and working on/ in the vicinity of power supply lines.

ii. Suitable work instructions/ procedures shall be prepared for each type of work location (height and type of pole/ supply network configuration) and the working personnel shall be trained at regular intervals by certified trainers on safety issues.

iii. All working personnel shall be provided with appropriate and adequate personal protection and safety equipment such as safety shoes, safety harness for working at heights, safety helmets, earthing rods etc. The ICE along with the representative of authority will conduct the annual safety audit of the concessionaire.

iv. The Concessionaire shall arrange to carryout safety audit at regular intervals by a competent entity possessing valid certificate on safety issues and recommended remedial measures shall be adopted/ implemented in an expeditious manner.

v. The Concessionaire shall ensure safety of general citizens/ public in all installations and works carried out by it under the installation and the O&M phase of the Project. Any consequences due to negligence or inefficiency of the Concessionaire shall be the responsibility of the Concessionaire.

7. Maintain updated asset register with complete details of all replacements/ changes/ modifications in the fixtures, infrastructure and other associated equipment/ ancillaries.

8. Ensuring knowledge transfer and training of Authority‘s staff for operation and maintenance of new energy efficiency technologies installed and submit the copies of warranties to the Authority before the

end of Term of the Agreement.

9. Hand over peaceful possession of the street lighting project along with the control room and the call center, free of encumbrances and in a condition, which is fit for the purpose.

10. Trimming of trees: If the branches of tree are obstructing the light flow or O&M, the Concessionaire must trim such branches and provide O&M in such instances with prior permission from concerned department

11. Concessionaire holds responsibility If damage occurs to the parts of high mast like motor, winch, ropes, carriage during the period of Project. Concessionaire must regularly apply oil/grease for moving parts of high mast to avoid failure/damage of such parts.

12. If any damages occur to poles /fixtures/ CCMS panel boxes (under the ownership of Authority) due to accidents, catastrophe events, Concessionaire must immediately proceed to location and clear the location and disconnect the damaged/broken parts from live parts ensure electrical safety of public.

13. Further, Concessionaire must assist Authority to carry damaged/ broken parts to Authority's premises.

14. Concessionaire must regularly conduct inspections in the evening to ensure all streetlights are in ON condition also must ensure no tapings is drawn from the circuit for the purpose of decorative/serial/flood lights by public. However, if such tapings are found, Concessionaire shall remove such tapings with prior permission of Authority.

15. If the Authority intends to arrange decorative/ serial/ flood lights during festival time, the Authority must get approval for such temporary arrangements from BESCOM, also such temporary loads shall not be connected to street light circuits which will impact on guaranteed energy savings and health of the circuit.

16. Concessionaire must address streetlights complaints on priority instructed by Authority

SCHEDULE – 3 TECHNICAL SPECIFICATIONS

1. Lux Levels & illumination ratio requirement by BBMP for different road groups

The IS 1944 (Parts I and II)-1970 provides code of practice for public lighting and specifies the street categorization criteria based on traffic density of roads, which is as presented in the table below.

Road group	Classification criteria
Group A	
Group A1	Very important routes with rapid and dense traffic where the only considerations are the safety and speed of the traffic and the comfort of drivers
Group A2	Main roads with considerable volume of mixed traffic, such as main city streets, arterial roads and thoroughfares.
Group B	
Group B1	Secondary roads with considerable traffic such as main local traffic routes, shopping streets
Group B2	Secondary roads, with light traffic and Residential and unclassified roads not included in previous groups

a. Lux level & illumination ratio as specified in standards

The Lux level, degree of uniformity, and the Luminaires as per IS 1944 (Part 1 & 2) -1970are as specified in the table below.

Classification or lighting installation	Lux levels on road surface (Lux)*	Ratio minimum to average illumination
Group A1	30	0.4
Group A2	15	0.4
Group B1	8	0.3
Group B2	4	0.3

b. Requirement for this Project on Lux Level for different road groups

With reference to road categorization criteria specified in IS 1944, the roads in Bengaluru city are classified as arterial and sub arterial roads (Group A1 & A2) and ward roads (Group B1,& B2). In addition to the road categorization, the Lux Level requirements by BBMP, which need to be adhered to by the concessionaire during the Term of the Agreement are as specified in the table below.

BBMP road categories	Classification or lighting installation	BBMP required Lux Levels on road surface (Lux)	Ratio minimum to average illumination
Arterial and Sub-arterial roads	Group A1	30	0.4
	Group A2	15	0.4
Ward area roads	Group B1	15	0.3
	Group B2	12	0.3

2 .Requirement

1. Replacing LED luminaires against each existing luminaire rating is given in the table below;

SL. No	Lamp Type	Quantity(no's)	% of Grand Total	Wattage of proposed LED street light for replacement(Watts)
A.1	**East Zone Existing Conventional Lights**			
A-1	SV250W	1643	1.26%	120
A-1	MH400W	85	0.07%	200
A-1	SV400w	50	0.04%	120
A-1	TL40W	5	0.00%	120
A-1	MV125W	61	0.05%	120
A-1	MH250W	4	0.00%	120
A-2	SV250W	3103	2.38%	90
A-2	MH400W	364	0.28%	200
A-2	MH250W	1	0.00%	120
A-2	TL40W	102	0.08%	90
A-2	MV125W	91	0.07%	90
A-2	SV400w	0	0.00%	90
B-1	SV250W	27594	21.15%	65
B-1	MH400W	501	0.38%	200
B-1	SV400w	80	0.06%	65
B-1	MH250W	47	0.04%	120
B-1	TL40W	282	0.22%	65
B-1	MV125W	1691	1.30%	65
B-2	SV250W	9965	7.64%	40
B-2	MH400W	172	0.13%	200
B-2	SV400w	17	0.01%	40
B-2	TL40W	46	0.04%	40
B-2	MH250W	17	0.01%	120
B-2	MV125W	1017	0.78%	40
Total- A.1		**46938**	**35.98%**	

A.2	Bommanahalli Partial Zone Existing Conventional Lights			
A-1	HPSV250W	35	0.03%	120
A-2	HPSV250W	4051	3.11%	90
A-2	FTL/CFL40W	173	0.13%	90
B-1	HPSV250W	631	0.48%	65
B-1	FTL/CFL40W	31	0.02%	65
B-1	FL250W	1	0.00%	120
B-2	HPSV250W	13994	10.73%	40
B-2	FTL/CFL40W	272	0.21%	40
B-2	HPSV70W	14	0.01%	40
B-2	FL250W	2	0.00%	40
Parks	HPSV250W	8	0.01%	40
Parks	FTL/CFL40W	15	0.01%	40
Parks	MV125W	382	0.29%	40
Parks	FL250W	3	0.00%	120
HM	FL250W	444	0.34%	120
HM	FL400W	114	0.09%	200
MM	FL250W	15	0.01%	120
Total-A.2		**20185**	**15.47%**	
TOTAL CONVENTIONAL LIGHT A.1+A.2		**67,123**	**51.45%**	

A.3	East Zone Existing LED Street Lights			
1	LED 24W	2068	1.59%	24
2	LED 65W	9035	6.93%	65
3	LED 90W	16415	12.58%	90
4	LED 120W	6468	4.96%	120
5	LED150WFL	1444	1.11%	150
6	LED240WFL	298	0.23%	240
Total- A.3		**35,728**	**27.39%**	
A.4	**Bommanahalli Partial Zone Existing LED Street Lights**			
1	LED90W	3545	2.72%	90
2	LED120W	546	0.42%	120
3	LED65W	3247	2.49%	65
4	LED30W	6304	4.83%	30
5	LED24W	126	0.10%	24
6	LED24WPT	1262	0.97%	24
7	FLLED150W	187	0.14%	150
8	FLLED200W	42	0.03%	200
Total-A.4		**15,259**	**11.70%**	
TOTAL EXISTING LIGHT A.3+A.4		**50,987**	**39.09%**	

A.5	EastZoneEmptyPolesProposedLEDStreetLights			
A1	LED	233	0.18%	120
A2	LED	436	0.33%	90

B1	LED	3924	3.01%	65
B2	LED	1462	1.12%	40
HM	LED (FL)	149	0.11%	200
MM	LED (FL)	9	0.01%	120
Total- A.5		**6213**	**4.76%**	
A.6	**BommanahalliPartialZoneEmptyPolesProposedLEDStreetLights**			
A1	LED	11	0.01%	120
A2	LED	1280	0.98%	90
B1	LED	200	0.15%	65
B2	LED	4449	3.41%	40
HM	LED (FL)	34	0.03%	200
MM	LED (FL)	141	0.11%	120
Total- A.6		**6115**	**4.69%**	
	TOTALEMPTYPOLESA.5+A.6	**12,328**	**9.45%**	
	GrandTotal=A.1+A.2+A.3+A.4+A.5+A.6	**130438**	**100%**	

Note: Proposed LED wattages are only indicative in nature. Concessionaire may opt for any other wattages provided the BBMP required Lux levels for different road categories as specified in schedule-3 are met and also the luminaires installed in different road categories meet the minimum total Lumen output as specified in serial No. -12 of Minimum technical specifications of LED street lights in Schedule-3.

System Warranty: Comprehensive on-site warranty of 7 years from the date of supply, installation and commissioning of LED street light fixtures and associated system.

Certifications and Test Report: The Concessionaire has to submit LM-79 certification from CPRI/CETL /ERDA or any NABL accredited Govt. Labs only. All other certification related to LED, CCMC and other equipments, Concessionaire can provide test reports from NABL accredited labs.

a. MINIMUM TECHNICAL SPECIFICATION OF LED STREET LIGHT, FLOOD LIGHTS FIXTURES, STATIC SMART METERS AND CCMS PANELS:

2. Technical specification of LED streetlight, flood lights fixtures:

Sl. No.	DESCRIPTION	SPECIFIED VALUES
01	Input operating voltage range	100-300V AC, universal electronic driver with internal surge protection of 4 KV (Applicability IS 15885, Driver Safety 16104-1/2) and power cut-off arrangement in case of phase-to-phase/ 440 V fault.
02	AC Input operating frequency range	50HZ ± 3%

<table>
<tr><td>03</td><td>Average rated life span of LEDs used in the luminaries</td><td>More than 50,000 hrs., case temperature of 105°C with respect to lumen maintenance of 70%</td></tr>
<tr><td>04</td><td>Interchangeability</td><td>Suitable for pole mount</td></tr>
<tr><td>05</td><td>Total Harmonic Distortion for the complete fixture</td><td>< 10%</td></tr>
<tr><td>06</td><td>Ambient Temperature</td><td>-10°C to +50°C</td></tr>
<tr><td>07</td><td>Working Temperature</td><td>-5°C to +60°C</td></tr>
<tr><td>08</td><td>Working Humidity</td><td>10% to 90% RH</td></tr>
<tr><td>09</td><td>Correlated Color Temperature (CCT)</td><td>=5500K-5900K(ANSI-NEMA)</td></tr>
<tr><td>10</td><td>Wattage – Design

Wattage - at operating current</td><td>One Watt minimum

One Watt minimum</td></tr>
<tr><td>11</td><td>LED efficiency (lm/W) (at operating current (design) and Tj =85 deg C)</td><td>More than 135 lumens/watt</td></tr>
<tr><td>12</td><td>Luminaries Efficiency:

Bidder to propose the LED Luminaire with Minimum Lumen output for each category of road as given below</td><td>
<table>
<tr><th>Road category</th><th>Existing Conventional Light</th><th>Min. Lumen output required for proposed LED Luminaire</th></tr>
<tr><td rowspan="6">A-1</td><td>SV 250W</td><td>15600</td></tr>
<tr><td>MH400W</td><td>26000</td></tr>
<tr><td>SV 400w</td><td>15600</td></tr>
<tr><td>TL40W</td><td>15600</td></tr>
<tr><td>MV125W</td><td>15600</td></tr>
<tr><td>MH250W</td><td>15600</td></tr>
<tr><td rowspan="6">A-2</td><td>SV 250W</td><td>11700</td></tr>
<tr><td>MH400W</td><td>26000</td></tr>
<tr><td>MH250W</td><td>15600</td></tr>
<tr><td>TL40W</td><td>11700</td></tr>
<tr><td>MV125W</td><td>11700</td></tr>
<tr><td>SV 400w</td><td>11700</td></tr>
<tr><td rowspan="6">B-1</td><td>SV 250W</td><td>8450</td></tr>
<tr><td>MH400W</td><td>26000</td></tr>
<tr><td>SV 400w</td><td>8450</td></tr>
<tr><td>MH250W</td><td>15600</td></tr>
<tr><td>TL40W</td><td>8450</td></tr>
<tr><td>MV125W</td><td>8450</td></tr>
<tr><td rowspan="2">B-2</td><td>SV 250W</td><td>5200</td></tr>
<tr><td>MH400W</td><td>26000</td></tr>
</table>
</td></tr>
</table>

		<table><tr><td>SV 400w</td><td>5200</td></tr><tr><td>TL40W</td><td>5200</td></tr><tr><td>MH250W</td><td>15600</td></tr><tr><td>MV125W</td><td>5200</td></tr><tr><td>HPSV 70</td><td>5200</td></tr></table>
13	Color Rendering Index of LEDs	> 70
14	Power factor	More than 0.95
15	Driver Efficiency	> 85%
16	LEDs shall be operated at a forward current	< 70% of rated maximum forward current, in the range of 350 mA to 1000 mA
17	Surge suppresser	**Internal voltage surge protection**: Universal electronic driver with internal surge protection of 6KV (Applicability IS 15885, driver safety 16104-1/2) **External voltage surge protection**: External surge protection device (SPD) with a minimum immunity level of 20KV / 10 kA (U_{oc}/I_{sc}) shall be separately installed with each fixture in line with IEC 61643-11 as amended up to date.
18	Finishing	Corrosion free High-pressure aluminum die cast / silver color corrosion resistant polyester powder coating
19	Heat sink	Good thermal management System should be provided & LED must be mounted on high pressure die cast aluminum casing with suitable large surface area by Means of fins to dissipate the heat to ambient air. Corrosion resistant LT grey / silver Nano powder coating. Silicon gasket to ensure ingress protection against moisture & dust.
20	Ingress protection	Optical & Control gear compartment IP-66 CPRI/NABL accredited lab test certificate shall be furnished at the time of inspection of materials at works.
21	Lens module for LEDs	LED lights shall be provided with lenses / Lens modules. Lens should be of material resistant to degradation during service, due to atmospheric components, to

		avoid adverse impact on light output
22	LEDs used in the luminary shall have	Min angle of 120 degree
23	Certification and Test reports preferred/ essential*	LM-79 reports from CPRI / ERDA/CETL or any NABL accredited Govt. Labs only. Other Reports from CPRI/ NABL accredited laboratories to be submitted along with Bid .
24	Integrated circuit (IC)	Industrial grade or above
25	Conform to Photo Biological Safety for the LEDs	As per IEC62471
26	Luminary configuration / Technical requirement	Shall consist of two separate optical & control gear chambers. It should be easily replaceable by removing only the control gear chamber cover in the field condition whenever problem arises in the control gear without disturbing optical chamber.
27	Manufacturer shall submit proof of procurement of LEDs & IES LM 80-08 / IS16105:2012 test reports of specific LED & IES LM 79-08/ IS16106:2012 test reports from any of the Accredited laboratory	Proof of LED purchase invoice along with Test reports shall be submitted at the time of inspection of materials at the works.
28	Impact resistance: The luminaire shall be built in such a way that it can withstand wind speed of 150kmph.	CPRI/NABL accredited lab report supporting the same shall be furnished by the manufacturer at the time of inspection of materials at the works. Impact resistance ≥ IK08
29	Light uniformity ratio (Emin /Eavg)	> 0.4
30	Optical assembly	Structured LED array for optimized roadway photometric distribution with photometric lenses designed to optimize application efficiency and minimize glare.
31	Protection from over voltage	The luminaries shall be suitable for operation within the input supply voltage range specified. The driver of the light should be able to sense and cut-off power to the light in case of phase to phase / 440 V fault.
32	BIS Mark	LED streetlight/flood light and electronic driver shall have Standard BIS Mark and registration number as below:

		IS 10322 (Part 5/ Sec 3) R-xxxxxxxx — LED Luminaries for Road and Street lighting IS 10322 (Part 5/ Sec 5) R-xxxxxxxx — LED Flood Lights
33	Embossment	Luminaire shall have company name/Logo Embossed on the housing. Stickering is not allowed
34	Sample Submission	The bidder must submit 1 No. of sample of each type of LED Luminaires proposed within 1 week from the date of technical bid opening.
35	LED Chip Type	SMD
36	Warranty	7 years

NOTE:

i. All Tests have to be confirmed and appropriate TEST REPORTS AND CERTIFICATIONS have to be submitted along with the Bid.

ii. The Bidder shall use LED Streetlights from notable manufacturers in India or abroad which are approved by BBMP. The Bidder shall submit necessary test certifications from the manufacturers.

iii. The manufacturer / supplier must be able to provide the test data to establish the authenticity and geniuses of the LEDs. The tests conducted on LED luminaires are classified as Type Test, Acceptance test and Routine Test.

iv. The bidders must submit to authority 01 No. sample of each type of LED luminaire bidder propose to be installed in the project within 1 week from the date of technical bid opening.

v. Sample size and criteria for conformity.

vi. The Luminaries shall be selected from the lot at random. In order to ensure randomness of selection, procedures given in IS 4905-1968 (Reaffirmed 2001) may be followed.

Test Scheme:

Sl. No.	Description of Test	Type Test	Acceptance Tests	Routine Tests
1	Visual and Dimensional check	Y	Y	Y
2	LM 80 Compliance certification	Y	Y	Y
3	LM 79 certificate from CPRI / ERDA/CETL or any NABL accredited Govt. Labs	Y	Y	Y
4	Checking of documents of purchase of LED	Y	Y	Y
5	Résistance to humidity	Y	-	-
6	Insulation résistance test	Y	Y	Y
7	HV test	Y	Y	Y
8	Over voltage protection	Y	-	-
9	Surge protection	Y	-	-
10	Reverse polarity	Y	Y	-
11	Heat resistance test	Y	Y	-
12	Lux measurement	Y	Y	-
13	Fire retardant	Y	-	-
14	Ingress protection test	Y	-	-
15	Endurance test	Y	Y	Y
16	Drop test	Y	Y	Y
17	Electronics test	Y	Y	Y

3. TECHNICAL SPECIFICATIONS OF CCMS PANEL:

S. No	Features	Description
1	Operational Features	The CCMS should be capable of switching ON and OFF the lights of a particular switching point and/or networked switching point from Central Control Station instantaneously or automatically throughout the year on basis of sunrise and sunset time depending on the geographical location of the switching point. • The CCMS should be able to communicate to Smart Energy meters on GSM (with IMEI number) and/or RF proven technology based remote streetlight monitoring system The CCMS unit should have a battery backup of at least 12 hours. The CCMS shall have optically isolated communication port to fetch data (this is required for safe data transfer and to protect unauthorized access)
		The control panel at each of the switch point/ feeder should have necessary control elements along with single/ 3-Phase Non- CT/ CT operated (for higher loads) smart energy meter Complied to the specification of IS 16444 Part-I and Part-2 (CT operated) with the following features:

S. No	Features	Description
		Smart meters should be variant-2 as mentioned in IS 16444 with C1 and C3 connectivity and IHD (in house display) and IHD communication module, WAN Communication module supported with GSM and be able for reading, switching, data logging, communication and control as per remote instructions from Central Control and Monitoring Centre. Following Parameters read at Variable time-intervals: • Phase wise Voltages (Phase to neutral) • Phase wise Current • Phase wise Power Factor • Frequency • Total Active Power (kW) • Total Apparent Power (kVA) • Metering kWh cumulative • Metering kVAh cumulative • Time of the day (TOD) • Number of hours the power supply was unavailable. • Special emergency on/ off facility with wireless control.
2	Energy measurement and communication features	Smart energy meters should be capable of logging parameters for each 15 minutes time block with stamping of date and time. Such data logs should be retained in the energy meters for a period of 60 days or more. These data logs shall be communicated to CCMS. Benchmarking capacity so as to generate alert SMS for: • Phase-wise currents on crossing threshold values* • Phase-wise voltages on crossing threshold values* • Outgoing and incoming MCB trips • Theft alerts • Group failure of lights • Leakage to ground • No output supply • Alert SMS shall be forwarded to five (5) phone numbers Type testing and acceptance testing report as per IS16444 shall be done from BIS/NABL Accredited Lab to be provided. It is to be calibrated annually. Calibration and sealing of the meter shall be as per applicable supply code and regulations * Please refer the technical specifications for designing the threshold values for voltage and current.
3	Web based Application	Central Control and Monitoring System functionalities • CCMS shall have a web-server to receive and record all data with time stamping from the smart energy meters. • It should be able to communicate with any individual switching points or collectively amongst networked switching points for control and monitoring.

S. No	Features	Description
		• It should able to record LED Luminaires glowing and non-glowing hours of a particular switching point. • It should be able to display the power failure details of a particular switching point and the relevant luminaires. • It should register all fault conditions like excess voltage/current drawn, no-power supply, etc. through the instantaneous alert messages sent by the Smart energy meters. • Reports such as energy saving report, lamp failure report, actual hours of operation, uptime (%), etc. should be generated on a daily basis from the data/readings received from the Smart energy meters. • Different user authorization levels should be settable and the central server should be capable of handling heavy traffic, i.e. the number of LED streetlights installed in wards under this program. • GIS Mapping should be done covering all switching points and the details of each switch point shall be viewable in the web application software through a Google-map interface or web based digital map. • All the CCMS units should be remotely configured from the Central • Control Unit: o Setting new ON/OFF timings o Setting the Response Time Count (RTC) time of Automation unit o Knowing the current status of any particular switching point. o Reset the unit. o The minimum interval for the update of data should be 15 minute but programmable up to 1 minute. o Auto synchronization of controller with server timing to be further synchronized with standard GPS clock timing. • The system monitors all the following from the Smart energy meters: o Voltages each phase o Current each phase o PF each phase o Metering kWh cumulative o Metering kVAh • Further system is able to indicate various faults o Failure of contactor o Status of the incoming supply (power failure) o High /low voltage o Overload on the phases o Number of hours of a group of LED luminaires connected with each switching point was glowing. • The central CCMS unit is capable of handling minimum 2500 number switching point units. • CCMS shall have server preferably dedicated server set-up or cloud-based arrangement to ensure 100% guarantee of the data transmission and real

S. No	Features	Description
		time data storage for last 2 years (24 Months) and archived data for the contract period. • Data authenticity and validation has to be ensured. Reports to be submitted in a common CS Smart energy meters format • Cyber security, safe database management, data retrieval and trouble-free operation of software and allied systems (24*7) to be ensured. • CCMS system should have a self-healing mechanism and in case of failure, Bidder to ensure resumption of service within 24 hours. Till resumption of full services, the default settings of the CCMS should ensure timely ON/ OFF operation of the streetlights. • System to report jamming/ hacking attempts and maintain status-quo in case of jamming/ hacking attempts i.e. if lights are ON, they should remain ON till the default OFF time recorded in the system. In case lights are OFF at the time of jamming attempt/ hacking, lights should remain OFF till default ON time recorded in the system. MOBILE APPLICATION: • **Platform**: Android • **Remote operation**: Switch ON / OFF (scheduled and on-demand). • **Report:** Consumption Reports (Current & Historical).
4.	Outer Box	OUTER BOX AND INTERNAL WIRING: Enclosure Material: MS sheet SWG 16 / 14 duly powder coated for corrosion resistance and long life. Earthing to be provided to the box. Visual: Opaque Ingress Resistance: IP-55 Impact Protection: greater than IK08. Fire retardant: Yes Door Tamper Switch: Push notification Locking Arrangement: Standard Lock
5.	**Smart meters**	**As per IS 16444 and shall comply specifications approved by respective BESCOM**

4. Technical specifications for Smart Energy Meters

i. The technical specification for the smart energy meters shall be certified by concerned BESCOM as per Karnataka Electricity Regulatory Commission (KERC), Central Electricity Authority and BESCOMs compliance.

ii. Concessionaire may procure the energy meters either from BESCOM or the vendors certified from BESCOM conforming to CEA/BESCOM technical specification.

5. Technical Specifications for Switching points / Feeder Panels

5.1 Broad Operational Features

a. Switching points/ Feeder panels should have GSM based remote streetlight monitoring system with capacity for self-protection from short-circuit, over voltage and anti-theft alert.

b. Principle equipment should be designed on the basis of 'Lossless Series Reactance with Secondary Compensation" technology ensuring efficiency of such principle equipment should not be less than 99.4% between 50% - 110% of loading.

c. Other than basic switching components, no other moving parts are allowed to be installed in the feeder panel.

d. Provisions to be made to protect the technologies and all components of feeder panels even if quality of power supply at the feeder level is not as per standard of performance and supply code regulations of utility.

e. All the principle equipment's along with input output switchgears, metering, switches (by-pass and tap changers), contactors, fuses, auto transformer coils etc. should be of reputed manufacturers like Siemens/ ABB/Schneider/GE/TAS etc. and should meet best engineering practices and norms as applicable in IS 8623 for LV switchgear and control assemblies, IEC: 60947-1&4 / IS:13947-1&4, IS 8828: 1996 / IEC 60898-2002, IEC 60947-3 standards and other relevant standards.

5.2 Rating and Switching components

a. The rating of the feeder panel switchgear should be at least 1.3 times the lighting load as estimated for new LED fixtures during the initial studies prior to replacement.

b. Electrical Contactor used in feeder panel should be compliant to IEC: 60947- 1&4 / IS:13947-1&4, Miniature Circuit Breaker (MCB) Specification should be compliant to IS 8828: 1996 / IEC 60898- 2002 & specifications for 3 position Load Break Switch (Rotary type) to be used in Manual and Auto mode should be compliant to IEC 60947-3 standards.

c. Feeder panels should be provided with appropriate rating of harmonic filters to keep the % ITHD at levels below as specified by Utility. Switched fuse units should be of 32 Amp continuous AC current capacities. Fuses used should be of 20 Amp. Rating of high rupturing capacity (S/ c current at least 50 kA)

d. 240 V AC 50 Hz Single Phase Two Wire / 415 VAC 50 Hz Three Phase Four Wire Input.

e. Power factor shall be more than 0.95

f. The panels should be equipped with a microprocessor based Dual Channel Almanac Timer controller (Astronomical timer-based controller) which should be user programmable to enable setting of ON/OFF times and also switching over to savings mode/bypass mode when required.

g. In case of Single-phase controller units, one (1) contactor for switching on/ off and in case of three- phase controller units, one (1) contactor for each phase is to be provided. The number of contactors used should be suitable for ON/OFF and for changeover between full voltage to various voltage taps and interchanging

between taps in line with specifications of current controller.

h. Deleted

i. Deleted

Communication Provisions

a. GSM modem for communication should be a Dual-band modem with power consumption less than 3 watts & modem should be programmed to be in Sleep-mode whenever communication is not done.

Enclosure & Fabrication

a. Enclosure Box of feeder panels shall be IP-55 compliant and should be fabricated out of MS sheet SWG 16 / 14 duly powder coated for corrosion resistance and long life. Panels should be provided with Hooter for door open. Utility Service Lamp inside Panel for use during maintenance work Gland Plates for Cable Entry at Incomer and Outgoing

b. Design life of the control panel should be mentioned in form of MTBF (mean time between failures) and it should be minimum 10 years.

c. Deleted

d. Deleted

6. Specifications for Centralized Control and Monitoring System (CCMS) & Automation System

Objective of centralized street light automation solution is to provide centralized control & monitoring of streetlights from a single control center and is capable of controlling, monitoring and analyzing the details at streetlight feeder panel level (switching point level). This will facilitate optimizing the energy costs by timely switching on/off of lamps & implementing voltage regulation during off-peak hours as well as savings in present street light maintenance cost by setting new standards in managing streetlights with minimal expenditure.

Centralized Control and Monitoring System (CCMS) & Automation System is comprised of wireless Central automation controller, server cluster, control center, enterprise middleware system, enterprise Management Information System and call center. The broad specifications for various components of CCMS and Automation system are as below.

7. Broad Operational Features

a. CCMS shall have a web-server to receive all data from the streetlight controllers

b. GIS Mapping should be done covering all switching points and the details of each switch point shall be viewable in the web application software through a Google Map interface or web based digital map.

c. Bulk messaging facility to be given so that any common changes to be effected into the individual street light

controller equipment's. CCMS panel is streetlights controller suitable for group control of lights.

d. CCMS should have real time control and should register all fault conditions through the instantaneous alert messages sent by the street light controller equipment's

e. Inbuilt scalability to support large lighting network.

f. The concerned personnel at the Authority should have access to the data (viewing rights) on a real time basis as well as the reports.

g. User settable Individual feeder panel ID & Password protected access to control functions.

h. Control Center to provide a snapshot of lighting status for a ward, zone, entire city.

8. Wireless Central Automation Controller

a. Act as heart of automation and should facilitate remote and auto on/off of streetlights for streetlight connected on different feeder panels.

b. Reports various parameters to server clusters. These are parameters that are captured by metering system and streetlight controller at individual feeder panels.

c. Report faults at individual feeder panels such as fuse failure, power failure, MCB trips, over load, contactor fault, activation of manual switch, ground fault, control cabinet door open, indication for street light failures, feeder panel door open etc.

9. Data storage and processing

Use high end server system/ cloud service which allows unlimited redundant data storage using any quality database systems.

The data collection system should work on open protocol having mechanism for assured delivery of data sent by hardware device

Data Backup: The System should have automated back-up facility to have regular back up of the data to ensure availability of the data and information. This should be achieved through mirror imaging of two HDDs. The backup system should facilitate any data regarding performance of the system in the last 24 months in 1 working day and any data regarding performance of the system during any period of the concession within 5 working days.

The centralized server should be adequately backed up for at least two hours by installing and maintaining suitable capacity online UPS system and air condition system for operational reliability.

10. Deleted

11. Functions

Complete monitoring on image of the entire geographic area at the screen and with projector attachment –

on back wall, where the operators monitor the streetlight and dispatch maintenance teams. Any alarms and their exact location should be shown on the map for easy and fast overview.

12. Enterprise Middleware

The application software should be based on service-oriented architecture and platform independent.

13. Enterprise Management Information System

Complete end to end enterprise software system to facilitate control, monitor and minimum key modules of management information system should be maintenance, planning, inventory management, contractor/maintenance, staff performance monitoring, reporting and access Control.

14. Deleted

15. Reports Generation

Reports such as energy saving report, feeder panel failure report, % uptime, etc. should be generated on a daily basis from the readings received

Asset management software showing defective units, if any and other user-defined asset management software showing defective units, if any and other user-defined reports should also be available in the CCMS.

16. Inspection:

a. The Bidder will keep the Authority informed in advance of the time of the starting and the progress of manufacture of equipment in its various stages so that arrangement could be made for inspection if necessary. The representative of the Authority will have access to the supplier's or his sub bidder's work at any time during working hours for the purpose of inspection.

b. The Concessionaire shall conduct testing and produce relevant reports of LED Luminaires, CCMS and smart meters by drawing samples from their manufacturing units to the authority. Sampling should

- For LED: 1 in every 100 units.
- For CCMS and Smart meters: 1 in every 25 units.

c. Inspecting the materials during manufacturing of the materials / equipment and testing and may select test samples from the materials going into plant and equipment. The supplier will provide the facilities for testing such samples at any time including access to drawings and production data at no charge to Authority.

d. Intimation to Authority by email and carry out the tests in the presence of representative of the Authority. If Authority feels necessary, it may select one sample from the lot at factory to send for testing at CPRI/ERTL/MNRE or any other standard NABL accredited laboratory.

e. The Authority may at its option get the materials inspected by the third party if it feels necessary.

f. The dispatches will be affected only if the test results comply with the specification. The dispatches will be

made only after the satisfaction by the Authority's Engineer in charge of the Project.

g. The acceptance of any quantity of materials will in no way relieve the supplier of its responsibility for meeting all the requirements of this specification and will not prevent subsequent rejection if such materials are later found to be defective or deviation from specification/IS.

h. The supplier will give 7 days' advance intimation to enable the Authority to depute its representative for witnessing the acceptance tests, if necessary.

i. If any inspected or tested materials / equipment fail to conform to the specification, the Authority may reject the materials and supplier will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs to the Authority.

j. After the delivery of material, it may be verified/ retested in full or taking one random sample before acceptance. In case of any deviation to the specification, found during the tests, the lot will be rejected or will be replaced by Bidder without any additional cost to Authority.

SCHEDULE - 4 INDEPENDENT CHARTERED ENGINEER INDICATIVE TERMS OF REFERENCE

The scope of work of the Independent Chartered Engineer is outlined below with specific details in the subsequent sections:

- Overseeing the asset Identification and marking;
- Approval of Equipment/LED streetlights installation plan; and
- Issuance of Equipment / LED streetlights commissioning certificate;

1. Overseeing Asset Identification and Marking

The Independent Chartered Engineer, as a part of asset verification team will participate in conducting the joint verification for asset identification. The team shall capture details for each and every street light point along with particulars of ward number, street name in consultation with Authority, switching point, energy meter's RR number or connection number, feeder panel, switching, protection, communication and control equipment, pole number, pole spacing/ span, fixture height, existing fixture type; rating & numbers for particular pole etc.

Once completion of asset identification, Concessionaire has to confirm energy meters under the ownership of Authority in consultation with respective BESCOM and/or Authority. Also must collect associated arrears on each Energy meter.

Independent Chartered Engineer shall ensure quality protocol is ensured during the installation to assess the life span of smart systems including the smart meters, CCMS system, other IT infrastructure etc. taking into the failure rate of devices, depreciation etc.

Independent Chartered Engineer shall certify the asset register inventory created jointly by the Authority and Concessionaire that shall define physical boundary of the Project in accordance with the guidelines set out at Schedule 3. Inventorizing and GIS asset mapping of electric poles so as to capture the GPS coordinates of poles.

Independent Chartered Engineer shall also validate the pole marked by the Concessionaire each new street lighting pole covered under this Project.

2. Approval of Equipment / LEDs Installation Plan

Independent Chartered Engineer shall validate and certify the ward wise LED streetlights installation plan prepared by the Authority and the Concessionaire, within [7] days of receipt of the same. This shall include the following:

a. Verification and certification of the existing street lighting inventory and project scope;

i. Categorization of Street Lighting Point

a. Details of switching points/ feeder panels, energy billing meter (including connection number), switching, protection, communication and control equipment etc.

b. Details of infrastructure including pole type, pole ownership, pole span/ spacing, pole height, fixture installation height, cable/ conductor type and its length, outreach arm/bracket type and its length etc. for each switching point. This should also include physical condition assessment of the assets and recommendations regarding replacement/ upgradation requirements.

c. Number, type, rating, working condition etc. of existing fixtures on each pole;

d. Validation of Single Line Diagrams (SLDs), indicative maps and any other details captured during asset verification;

e. Approval or rejection of the findings set out therein, including the recommendation, if any, to remove or add certain Project street light points from the scope of the Project.

3. Validation and Approval of Equipment Installation Plan

a. Switching Point wise feeder panel installation plan, including adequacy of proposed KVA72 rating of proposed feeder panel, recommendations regarding clubbing/ optimization of switching points etc.

b. Infrastructure improvement proposals including conductor/ cable replacements, bracket/ outreach arm replacements, pole replacements etc., if any, in accordance with the scope defined in the Agreement.

c. Pole wise proposed LED Luminaire configuration (numbers, ratings etc.), including its validation.

4. Issuance of Equipment Commissioning Certificate

Post equipment installation by the Concessionaire, the Independent Chartered Engineer shall be required to issue Equipment/LEDs commissioning certificate to the Concessionaire as per the provisions of the Agreement and in accordance with the scope outlined below:

a. Verify the quantities of equipment/ material installed by the Concessionaire;

b. Verify adherence to the Technical Specifications, quality of installations and workmanship;

c. Verify kW loading at respective switching point/ feeder panel level:

d. kW measurements for select switching points / feeder panel level shall be validated against the estimated kW load on the switching point considering the different ratings and numbers of LED Luminaires.

e. Switching Point wise actual kW, estimated kW and % variation in actual kW w.r.t estimated kW. Feeder Panels with % variation of more than +10% would be brought to the notice of Authority.

f. Sanctioned load and connected load details of each smart energy meter.

g. Sample measurements regarding voltage drops in cables used

5. Other project related activities

1. The baseline consumption shown in the RFP is subject to restatement either by increase or decrease once the replacement work of LED bulbs along with static smart metering and CCMS is completed. The baselines would be restated in the following manner

a. During release of existing conventional bulbs by the private Concessionaire, a joint inventory along with Authority officials/Independent Chartered Engineer shall be taken duly recording the pole wise data covering type of bulb, number of bulbs, wattages of each bulb, pole number, Geo-positions etc. on a daily basis during replacement.

b. At the end of the replacement the aggregate of each type, wattage etc would be worked out by the Independent Chartered Engineer for restatement based on the actual numbers. Once this is established, and jointly agreed upon by both the parties (i.e. The Concessionaire and Independent Chartered Engineer), the "baseline consumption" remains firm throughout the project period. This would be the basis for arriving at the guaranteed savings month on month.

c. As per RFP, the total wattage of LED bulbs post replacement is estimated to be _ watts. After the successful implementation of the Project the Independent Chartered Engineer will work out the actual wattage of LED bulbs replaced, which will form the basis for readjustment of EMI

d. Post installation of LED, the sanctioned load of the street lighting system will be significantly more than the connected load. Therefore, in order to realize the benefit of reduced energy consumption after the installation of LED lights, Authority will have to get the sanctioned load reduced revised proportionately for each of the street lighting installations/metering point. Independent Chartered Engineer will assist the Authority take-up this with BESCOM so that sanctioned load of each of the street light metering point is reduced based on the new load after the installation of LED lights.

e. Independent Chartered Engineer shall be responsible for certification of energy savings, penalty for non-achievement of guaranteed savings/ event of default, recommendations during force majeure event, penalty for not meeting the performance indicators etc.

f. Submit monthly/Flash reports to the Authority during the project tenure and participate in all the meetings relevant to the project as per the requirement of the Authority.

g. Independent Chartered Engineer shall co-ordinate with BESCOM, Authority and other relevant authority wherever necessary for smooth implementation of the Project during the implementation and operations cum maintenance period.

h. Independent Chartered Engineer shall ensure all regulatory and statutory compliances connected with the Project.

i. Independent Chartered Engineer shall ensure that during the Condition Precedent Period both the parties adhere to the terms and conditions of the tender document. In case of extension/dispute, the Independent Chartered Engineer shall guide the Authority in the interest of the Project.

j. Any other obligations that is deemed to be the responsibility of the Independent Chartered Engineer as per the terms of the Agreement entered between the Authority and Concessionaire.

k. Independently review and monitor works carried out to ensure quality and performance compliance of the PPP Concessionaire. Undertake regular inspections, site visits and quality audits of works and report the same to Authority.

l. In order to ensure the quality of the LED lights and CCMS panels etc. supplied by the concessionaire for the project is as per the technical specification provided in the SCHEDULE -3 of the contract agreement, Independent Engineers along with Authority has to visit the concessionaire warehouse to collect the sample and send it to CPRI/NABL accredited laboratory for testing and certification. The responsibility of the obtaining the test certificates and cost incurred for this has to be borne by the concessionaire.

6. Appointment & Replacement of an Independent Chartered Engineer:

Authority shall invite tenders in line with the indicative scope of work above. Authority shall select Independent Chartered Engineer from the bids received based on the technical and financial criteria that may be specified in such tender documents.

The Authority may solely decide to replace the Independent Chartered Engineer(s) in any of the following circumstances:

a. if Authority have a reason to believe that the Independent Chartered Engineer has not discharged its duties in accordance with the terms of the Agreement;

b. if Authority decide not to renew the appointment of the incumbent Independent Chartered Engineer; or if the Independent Chartered Engineer desires to discontinue its services in accordance with the terms of its engagement

SCHEDULE - 5 KEY PERFORMANCE INDICATORS & REPORTING FORMATS

1. Performance parameters

a. Guaranteed savings:

The Project envisages guaranteed energy saving to be _____ with replacement Streetlights with LED Streetlights along with Centralized Control and Monitoring System (CCMS).

b. Baseline Assessment:

As per the latest physical GIS survey of streetlights conducted by TIA, there are 20,975 nos of conventional streetlights, 4,818 No's of LED streetlights and 841 nos. of energy meters. The concessionaire will also install 5000 additional new lights. For quantity, type of streetlights/flood lights and other details TABLE-1 shall be referred.

TABLE-1

Road Category	Existing Street Lights/ Flood Lights Type	Quantity (no's)	% of Grand Total	Rated Power (Watts)	Proposed LED Street Lights Wattage replacement	Guranteed Energy Savings (%)
A.1	**East Zone Existing Conventional Lights**					
A-1	SV250W	1643	1.26%	250	120	52.00%
A-1	MH400W	85	0.07%	400	200	50.00%
A-1	SV400w	50	0.04%	400	120	50.00%
A-1	TL40W	5	0.00%	40	120	-200.00%
A-1	MV125W	61	0.05%	125	120	4.00%
A-1	MH250W	4	0.00%	250	120	52.00%
A-2	SV250W	3103	2.38%	250	90	64.00%
A-2	MH400W	364	0.28%	400	200	50.00%
A-2	MH250W	1	0.00%	250	120	52.00%
A-2	TL40W	102	0.08%	40	90	-125.00%
A-2	MV125W	91	0.07%	125	90	28.00%
A-2	SV400w	0	0.00%	400	90	77.50%
B-1	SV250W	27594	21.15%	250	65	74.00%
B-1	MH400W	501	0.38%	400	200	50.00%
B-1	SV400w	80	0.06%	400	65	83.75%
B-1	MH250W	47	0.04%	250	120	52.00%
B-1	TL40W	282	0.22%	40	65	-62.50%
B-1	MV125W	1691	1.30%	125	65	48.00%
B-2	SV250W	9965	7.64%	250	40	84.00%
B-2	MH400W	172	0.13%	400	200	50.00%
B-2	SV400w	17	0.01%	400	40	90.00%
B-2	TL40W	46	0.04%	40	40	0.00%
B-2	MH250W	17	0.01%	250	120	52.00%

B-2	MV125W	1017	0.78%	125	40	68.00%
Total-A.1		**46938**	**35.98%**			
A.2	**Bommanahalli Partial Zone Existing Conventional Lights**					
A-1	HPSV250W	35	0.03%	250	120	52.00%
A-2	HPSV250W	4051	3.11%	250	90	64.00%
A-2	FTL/CFL40W	173	0.13%	40	90	-125.00%
B-1	HPSV250W	631	0.48%	250	65	74.00%
B-1	FTL/CFL40W	31	0.02%	40	65	-62.50%
B-1	FL250W	1	0.00%	250	120	52.00%
B-2	HPSV250W	13994	10.73%	250	40	84.00%
B-2	FTL/CFL40W	272	0.21%	40	40	0.00%
B-2	HPSV70W	14	0.01%	70	40	42.86%
B-2	FL250W	2	0.00%	250	40	84.00%
Parks	HPSV250W	8	0.01%	250	40	84.00%
Parks	FTL/CFL40W	15	0.01%	40	40	0.00%
Parks	MV125W	382	0.29%	125	40	68.00%
Parks	FL250W	3	0.00%	250	120	52.00%
HM	FL250W	444	0.34%	250	120	52.00%
HM	FL400W	114	0.09%	400	200	50.00%
MM	FL250W	15	0.01%	250	120	52.00%
Total-A.2		**20185**	**15.47%**			
A.3	**East Zone Existing LED Street Lights**					
1	LED 24W	2068	1.59%	24	24	0.00%
2	LED 65W	9035	6.93%	65	65	0.00%
3	LED 90W	16415	12.58%	90	90	0.00%
4	LED 120W	6468	4.96%	120	120	0.00%
5	LED150WFL	1444	1.11%	150	150	0.00%
6	LED240WFL	298	0.23%	240	240	0.00%
Total-A.3		**35728**	**27.39%**			
A.4	**Bommanahalli Partial Zone Existing LED Street Lights**					
1	LED90W	3545	2.72%	90	90	0.00%
2	LED120W	546	0.42%	120	120	0.00%
3	LED65W	3247	2.49%	65	65	0.00%
4	LED30W	6304	4.83%	30	30	0.00%
5	LED24W	126	0.10%	24	24	0.00%
6	LED24WPT	1262	0.97%	24	24	0.00%
7	FLLED150W	187	0.14%	150	150	0.00%
8	FLLED200W	42	0.03%	200	200	0.00%
Total-A.4		**15259**	**11.70%**			
A.5	**East Zone Empty Poles Proposed LED Street Lights**					
1	LED	233	0.18%	120	120	0.00%
2	LED	436	0.33%	90	90	0.00%
3	LED	3924	3.01%	65	65	0.00%
4	LED	1462	1.12%	40	40	0.00%

5	LED (FL)	149	0.11%	200	200	0.00%
6	LED (FL)	9	0.01%	120	120	0.00%
Total-A.5		**6213**	**4.76%**			
A.6	**Bommanahalli Partial Zone Empty Poles Proposed LED Street Lights**					
1	LED	11	0.01%	120	120	0.00%
2	LED	1280	0.98%	90	90	0.00%
3	LED	200	0.15%	65	65	0.00%
4	LED	4449	3.41%	40	40	0.00%
5	LED (FL)	34	0.03%	200	200	0.00%
6	LED (FL)	141	0.11%	120	120	0.00%
Total-A.6		**6115**	**4.69%**			
Grand Total=A.1+A.2+A.3+A.4+A.5+A.6		**130438**	**100%**			

Note:

1. Proposed LED wattages are only indicative in nature. Concessionaire may opt for any other wattages provided the BBMP required Lux levels for different road categories as specified in schedule-3 are met and also the luminaires installed in different road categories meet the minimum total Lumen output as specified in serial No. -12 of Minimum technical specifications of LED street lights in Schedule-3.

2. Each conventional Flood light fixture in the high mast comprises of multiple lamps. Quantity of LED floodlight fixtures proposed is equal to quantity of conventional Flood light fixtures.

Analysis of one-year electricity bills shows approx consumption as 129.63 Million.units.

In order to arrive at the baseline consumption, we have considered all 100% street lighting systems are working unlike the existing deficient service level.

Baseline study conducted in the previous study through a Physical survey of all poles, lighting fixtures, and establishment of GIS coordinates for all the lighting poles.

TIA, based on the existing type of conventional lamps, burning hours of usage and seasonality, has worked out the existing consumption of 118110 (including 50987 LED streetlights) streetlights as well as the savings post replacement of LED lights considering the average consumption of empty pole lights of 12328 Nos.. For detailed analysis of Baseline study for Pre and post replacement of Streetlights, Table-2 shall be referred.

TABLE-2

Baseline Assessment explaining pre-replacement and post replacement details

East Zone											
Sl. No.	Conventional Street Lights			Pre-replacement annual energy Consumption			Post replacement annual energy Consumption			Savings(kWh)	
	Type	Rated Wattage (Watts)	Quantity (Nos.)	Choke Losses (kW)	Total Wattage	Total (4 x 6 x burning hours/annum) (kWh)	Rated Wattage of Proposed LED (W)	Quantity of Replaced LED(No.)	Total Consumption(8 x 9 x burning hours/annum) kWh	kWh (7-10)	% (11/7)
1	2	3	4	5	6	7	8	9	10	11	12
A	Conventional Street Lights										
A-1	SV 250W	250	1643	38	288	18,11,038	120	1643	7,55,911	10,55,126	58.26%
A-1	MH400W	400	85	60	460	1,49,909	200	85	65,178	84,731	56.52%
A-1	SV 400w	400	50	60	460	88,182	200	50	38,340	49,842	56.52%
A-1	TL40W	40	5	6	46	882	120	5	2,300	-1,419	-160.87%
A-1	MV125W	125	61	19	144	33,619	120	61	28,065	5,555	16.52%
A-1	MH250W	250	4	38	288	4,409	120	4	1,840	2,569	58.26%
A-2	SV 250W	250	3103	38	288	34,20,359	90	3103	10,70,721	23,49,638	68.70%
A-2	MH400W	400	364	60	460	6,41,965	200	364	2,79,115	3,62,850	56.52%
A-2	MH250W	250	1	38	288	1,102	120	1	460	642	58.26%
A-2	TL40W	40	102	6	46	17,989	90	102	35,196	-17,207	-95.65%
A-2	MV125W	125	91	19	144	50,154	90	91	31,400	18,753	37.39%
A-2	SV 400w	400	0	60	460	0	90	0	0	0	#DIV/0!
B-1	SV 250W	250	27594	38	288	3,04,16,176	65	27594	68,76,701	2,35,39,476	77.39%
B-1	MH400W	400	501	60	460	8,83,584	200	501	3,84,167	4,99,417	56.52%
B-1	SV 400w	400	80	60	460	1,41,091	65	80	19,937	1,21,154	85.87%
B-1	MH250W	250	47	38	288	51,807	120	47	21,624	30,183	58.26%
B-1	TL40W	40	282	6	46	49,735	65	282	70,277	-20,543	-41.30%
B-1	MV125W	125	1691	19	144	9,31,974	65	1691	4,21,414	5,10,559	54.78%
B-2	SV 250W	250	9965	38	288	1,09,84,170	40	9965	15,28,232	94,55,938	86.09%
B-2	MH400W	400	172	60	460	3,03,346	200	172	1,31,890	1,71,456	56.52%
B-2	SV 400w	400	17	60	460	29,982	40	17	2,607	27,375	91.30%
B-2	TL40W	40	46	6	46	8,113	40	46	7,055	1,058	13.04%
B-2	MH250W	250	17	38	288	18,739	120	17	7,821	10,917	58.26%
B-2	MV125W	125	1017	19	144	5,60,507	40	1017	1,55,967	4,04,540	72.17%
Total- A			**46,938**			**5,05,98,832**		**46,938**	**1,19,36,220**	**3,86,62,612**	**76.41%**
B	Existing LED Street lights/Floodlights										
1	LED24W	24	2068	0	24	1,90,289	N/A	N/A			0%
2	LED65W	65	9035	0	65	22,51,612	N/A	N/A			0%
3	LED90W	90	16415	0	90	56,64,160	N/A	N/A			0%

4	LED120W	120	6468	0	120	29,75,797	N/A	N/A			0%
5	LED150W FL	150	1444	0	150	8,30,444	N/A	N/A			0%
6	LED240W FL	240	298	0	240	2,74,208	N/A	N/A			0%
Total-B			**35,728**			**1,21,86,511**	N/A	N/A	**1,21,86,511**		0%
Total=A+B (Existing Street Lights)			**82,666**			**6,27,85,342**			**2,41,07,395**	**3,86,77,947**	**61.58%**
C	**Empty Poles**										
1	LED		**6,213**						**18,11,860**	**3,68,66,087**	**58.72%**

Bommanahalli Partial

Sl. No.	Conventional Street Lights			Pre-replacement annual energy Consumption			Post replacement annual energy Consumption			Savings(kWh)	
	Type	Rated Wattage (Watts)	Quantity (Nos.)	Choke Losses (kW)	Total Wattage	Total (4 x 6 x burning hours/annum) (kWh)	Rated Wattage of Proposed LED (W)	Quantity of Replaced LED (No.)	Total Consumption(8 x 9 x burning hours/annum) kWh	kWh (7-10)	% (11/7)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
A	**Conventional Streetlights/Floodlights**										
A-1	HPSV250W	250	35	38	288	38,580	120	35	16,103	22,477	58.26%
A-2	HPSV250W	250	4051	38	288	44,65,316	90	4051	13,97,838	30,67,478	68.70%
A-2	FTL/CFL40W	40	173	6	46	30,511	90	173	59,695	-29,184	-95.65%
B-1	HPSV250W	250	631	38	288	6,95,536	65	631	1,57,252	5,38,284	77.39%
B-1	FTL/CFL40W	40	31	6	46	5,467	65	31	7,726	-2,258	-41.30%
B-1	FL250W	250	1	38	288	1,102	120	1	460	642	58.26%
B-2	HPSV250W	250	13994	38	288	1,54,25,236	40	13994	21,46,120	1,32,79,117	86.09%
B-2	FTL/CFL40W	40	272	6	46	47,971	40	272	41,714	6,257	13.04%
B-2	HPSV70W	70	14	11	81	4,321	40	14	2,147	2,174	50.31%
B-2	FL250W	250	2	38	288	2,205	40	2	307	1,898	86.09%
Parks	HPSV250W	250	8	38	288	8,818	40	8	1,227	7,591	86.09%
Parks	FTL/CFL40W	40	15	6	46	2,645	40	15	2,300	345	13.04%
Parks	MV125W	125	382	19	144	2,10,535	40	382	58,584	1,51,951	72.17%
Parks	FL250W	250	3	38	288	3,307	120	3	1,380	1,927	58.26%
HM	FL250W	250	444	38	288	4,89,410	120	444	2,04,276	2,85,135	58.26%
HM	FL400W	400	114	60	460	2,01,055	200	114	87,415	1,13,640	56.52%
MM	FL250W	250	15	38	288	16,534	120	15	6,901	9,633	58.26%
	Total-A		**20185**			**2,16,48,549**		**20185**	**41,91,444**	**1,74,57,105**	**80.64%**
B	**Existing LED Streetlights/Floodlights**										
1	LED90W	90	3545	0	90	12,23,238					0.00%
2	LED120W	120	546	0	120	2,51,204					0.00%
3	LED65W	65	3247	0	65	8,09,185					0.00%
4	LED30W	30	6304	0	30	7,25,086					100.00%
5	LED24W	24	126	0	24	11,594					200.00%

6	LED24WPT	24	1262	0	24	1,16,124					300.00%
7	FLLED150W	150	187	0	150	1,07,544					400.00%
8	FLLED200W	200	42	0	200	32,206					500.00%
	Total-B		**15259**			**32,76,180**			**32,76,180**		**0.00%**
Total =A+B (ExistingStreetLights)			**35444**			**2,49,24,729**			**74,67,624**	**1,74,57,105**	**70.04%**
C	**Empty Poles**										
1	LED		**6115**						**12,88,351**	**1,61,68,754**	**64.87%**
Grand Total of East and Bom'halli (p)						**8,77,10,071**			**3,46,75,235**	**5,30,34,836**	
Guaranteed Energy Savings(%)							**60.466%**				
Burninghours:10hoursforJantoJune(181days),11hoursforJunetoDecember(184days)											

Note:

1. The above table describes type, quantity, wattage of all streetlights under the ownership of Authority which are installed on various structures like RCC/PCC poles, metal poles, High-mast structures, in various streets, Highways, flyovers/bridges, parks, Corporation premises etc. in the jurisdiction of BBMP.

2. Concessionaire should study and understand the existing Distribution system of respective BESCOMs and Streetlights to be installed in the project must be compatible to existing Distribution system.

3. As on bidding date, the existing LED lights in corporation limits are not having any guarantee/warranty period from OEM.

a. Energy Savings

TABLE-3

Particulars	Value
Energy Consumption before LED replacement (kwh) (Grand total (column7, Table-2)	**8,77,10,071**
Energy Consumption post replacement of LED (kwh) (Grand total (column10, Table-2)	**3,46,76,235**
Guaranteed Energy Savings due to replacement (kwh) Grand total (column11, Table-2)	**5,30,33,836**
Guaranteed Energy Savings (%) (Grand total (column12, Table-2)	**60.46%**

During the replacement of conventional lights the Concessionaire shall carry out the following

- During release of existing conventional Streetlights by the Concessionaire, a joint inventory along with Authority officials/Independent Chartered Engineer shall be taken duly recording the pole wise data covering type of streetlights, number of streetlights, wattages of each streetlights, pole number, Geo-positions etc. on a daily basis during replacement. At the end of the replacement, the aggregate of each type, wattage etc. would be collated.

- The above calculation does not take in account the dimming and alternative switching ON-OFF of streetlights. Dimming of LED streetlights /flood lights is not allowed.

c. Key Performance Indicators:

The Concessionaire shall be responsible for meeting the following Key Performance Indicators (KPI) during the Term of the Project.

TABLE-4

KPI	Prescribed Levels	Penalty Details
Rectification of defective / non-glowing /partially glowing / flickering /streetlight	Less than 24 hours from time of registration/ appeared in CCMS software	• Concessionaire shall address complaints within 24 hrs. of registration / appeared in CCMS software. If Concessionaire fails to address the complaint, he will be penalized with 10 X monetized value of energy consumption of Particular Street for non-burning hours beyond 24 hours.
Guaranteed savings of 60.46 %	Concessionaire has to maintain the minimum guaranteed savings of 60.46 %	• For every 1% drop in guaranteed savings, penalty shall be levied at the rate of 2 times the prevailing energy charges payable to BESCOM, to the extent of energy savings reduced • If the savings falls below 40%, then the EMI for that month will be forfeited and the "Authority" shall decide on continuation of contract. • If the concessionaire fails to achieve the promised savings, a penalty of twice the electricity charges will be cut from his payment and if this goes below 25%, then the contract will be terminated.

KPI	Prescribed Levels	Penalty Details
Uptime of the installations should be 99% at any given point of time. (Conversely downtime of installations should be maximum 1%)	99%	In a month, on any given day at any given point of time during the operational hours, if the percentage of LED fixtures which remains non- functional is more than 1% of the total number of fixtures in the Project area, then a penalty will be levied equivalent to 0.1% of the monthly EMI amount for each day when such incidence occurs during the month.

In case the Concessionaire fails to achieve the level of performance against the KPI as specified in this document the authority may proceed with deduction of penalties from the payment of EMI.

If the concessionaire achieves more than the guaranteed savings, then the additional energy savings will be equally shared between the "Authority and Concessionaire".

d. EMI Calculation:

The EMI payable to concessionaire would be:

Amount Payable to the Concessionaire = EMI + (incremental savings in terms of units) X 50% X energy charge (as per prevailing BESCOM tariff)- (Penalties)

Note: In case of outages and lights are closed down, based on the outage/lights off hours and the extent of the outage, the effect of outage from Conventional Light Consumption for the month should be subtracted, to calculate energy savings.

Example:

Let the baseline power wattage was 20000 watts

A (gain factor) = Baseline power wattage of conventional lamps/ post replacement power wattage

If there are 1000 lights of each 10 Watt in the post replacement,

Gain factor A = 20000/1000x10W = 2

Then in the month of April, if 200 lights are under outage/closed down for 50 hours

(B)Baseline energy consumption = (baseline power wattage x 30days x burning hours/day) – (Post replacement wattage of the lights under outage/closed down x Gain factor (A) x period of outage)

i.e., 20000x(30x10)- (200x10x2x50) = 5800 kWh

Energy savings for the month

$$= \frac{Baseline\ Energy\ Consumption\ (B) - Energy\ Consumption\ of\ the\ installed\ lights\ for\ the\ month}{Baseline\ Energy\ consumptions\ (B)}$$

Example for Calculating amount payable to: If the EMI is Rs 100000 and the incremental savings in terms of units is 15 and the energy charges is Rs 5.5/unit then.

*Amount Payable to the LCO = 100000 + (15 units x 50% x Rs 5.5 per unit)

= Rs. 100041.25 for that particular month

*Considering no power shutdowns, and 100% uptime and all complaints are addressed within defined time.

e. Penalty Demonstration:

4. Penalty due to reduction in Guaranteed energy savings:

For every 1% drop in guaranteed savings, penalty shall be levied at the rate of 2 times the prevailing energy charges payable to BESCOM, to the extent of energy savings reduced.

Parameter	**Value**
Pre replacement Energy consumption (kWh.)	**8,77,10,071**
Post Replacement Energy Consumption (kWh.)	**3,46,76,235**
Guaranteed Energy Savings (kWh.)	**5,30,33,836**
Guaranteed Energy Savings (%.)	**60.46%**

In case the energy charges in that particular month is Rs 6.00 / unit and the EMI payable is Rs. 100000 per month, then for every 1% drop in Guaranteed Savings the drop in units is 50 (for demonstration purpose only), the EMI payable shall be

TABLE-5

Guaranteed Savings	**Penalty (Rs)**	**EMI (Rs/Month)**
60.46% (Assumption)	Nill	1,00,000
60.46%-59.46%	2x6x50	99400
59.46%-58.46%	2x6x100	98800
58.46%-57.46%	2x6x150	98200
57.46%-56.46%	2x6x200	97600
56.46%-55.46%	2x6x250	97000
55.46%-54.46%	2x6x300	96400
54.46%-53.46%	2x6x350	95800
53.46%-52.46%	2x6x400	95200
52.46%-51.46%	2x6x450	94600
51.46%-50.46%	2x6x500	94000
50.46%-49.46%	2x6x550	93400
49.46%-48.46%	2x6x600	92800
48.46%-47.46%	2x6x650	92200
47.46%-46.46%	2x6x700	91600
46.46%-45.46%	2x6x750	91000
45.46%-44.46%	2x6x800	90400

44.46%-43.46%	2x6x850	89800
43.46%-42.46%	2x6x900	89200
42.46%-41.46%	2x6x950	88600
41.46%-40.46%	2x6x1000	88000

If the Energy Savings falls below 40% Then EMI for that month will be forfeited and this shall be treated as "Concessionaire Event of Default".

5. Penalty due to not maintaining uptime of minimum 99%:

Failure to maintain uptime of minimum 99% of all LED lamps in the Project area will attract the fine of 0.1% of EMI payable for the month for each such day/days, witnessed / documented in the CCMS.

Example: Assuming the monthly EMI is Rs 1,00,000/-. In case of BRUHAT BENGALURU MAHANAGARA PALIKE, assuming there are 38,889 streetlights. As per the understanding of the uptime, at any given point of time approximately 388 numbers of streetlights (1% of 38,889) can be non-functional out of 38,889. If number of non-functional lights on any given day at any given point of time during the operational hours is more than 1%, then it will be recorded as one event of failure by the Concessionaire and a penalty equivalent to Rs. 100/- (0.1% of Rs. 1,00,000/-) will be levied. If such incidence happens for 5 days during the month, then total penalty of Rs. 500/- shall be levied.

6. Penalty due to not addressing burnt out/defective streetlights within 24 hours:

Concessionaire shall address complaints within 24 hrs of registration. If Concessionaire fails to address the complaint, he will be penalized with 10 X monetized value of energy consumption of particular streetlight per day.

Example: Assuming the complaint is registered for addressing of defective/burnout streetlight at 3.00 pm 20-11-2019, concessionaire must address the complaint before 3.00 pm 21-11-2019. If concessionaire fails to address before 3.00 pm 21-11-2019, then penalty will start from 21-11-2019. If registered complaint is for LED flood light (150 watts) of high mast, then penalty / day will be:

i. 10X0.15X10X(prevailing Energy charges as per BESCOM tariff) during Jan to Jun

ii 10X0.15X11X(prevailing Energy charges as per BESCOM tariff) during Jul to Dec

7. Liquidated Damages

A. Delay Liquidated Damages

The Project COD is to be achieved within 8 months from the Effective Date as per the milestones below

Milestone 1 – Installation of minimum 50% of LED Streetlights and corresponding CCMS panels in the first 4 months.

Milestone 2 – Remaining 50% of work in the rest 4 months

An extension of additional 2 months can be granted by the Authority in consultation with the ICE and with the levying of liquidated damages as shown in table below, permissible up to maximum value of

10% of the Total Project Cost.

TABLE-6

Milestone	Period	Reference Document	L.D
Milestone 1	4 months from Effective date	Approved EIP (Equipment Installation and manpower deployment plan)	(50% of the agreed capital cost)* (0.1 %) * (delay in days).
Milestone 2	4 months	Approved EIP (Equipment Installation and manpower deployment plan)	(Agreed project cost) * (0.1 %) * (delay in days).

Any delay beyond 10 months from the Effective Date, shall be treated as Concessionaire Event of Default and the Authority shall have the right to terminate the Agreement and encash the Performance Security.

B. Future Expansion

For future expansion of LED lighting by the same PPP partner /Concessionaire, the additional capacity shall be limited to a maximum of 25% capacity envisaged under the Agreement, subject to a maximum of 5% per annum.

The basis for pricing for capacity addition shall be as per rates fixed by Bruhath Bengaluru Mahanagara Palike (B.B.M.P) after following due process, based on the prevailing market rates for different LED luminaries/fixtures and accessories from time to time.

Any capacity addition during the project period will be through additional allocation by the ULBs out of its own financial resources (SFC untied grants/ municipal funds/ Nagarothana / etc.).

TABLE-7
Ward wise priority plan (To be filled by Authority)

Sl no	***Ward No. (priority wise)***
1	***Provided at the time of execution of agreement***

TABLE-8
(shall be filled by Concessionaire)

Sl. No	**Month**		**Qty. of receipt of stock/ Installation from OEM**			**Manpower**
			LED luminaires	**Brackets**	**CCMS with Smart meters.**	
1	Milestone -1 (1st-4th month)	1				
		2				
		3				
		4				
2	Milestone-2 (5th-8th month)	5				
		6				

TABLE-09
(Separately uploaded on e-procurement portal)

Refer Attachment Table-09

Ward:01…							
Sl. no.	**RR / Unique Identification number of energy meter**	**GIS co-ordinate of energy meter / switching point**	**Pole No. (BESCOM / ULB / Unique Identification no.)**	**GIS co-ordinates of pole (Latitude, Longitude)**	**Type of streetlight/ flood light**	**Rated wattage**	**Rated wattage of proposed LED streetlight / flood light.**
1							
2							
3…							

Note: Unique Identification No. is the temporary asset no. provided during the streetlight survey.

8. Detailed Methodology & Formats

a. The Concessionaire shall be responsible for maintaining the LED Luminaires under the Project in good working condition and shall ensure the following during the Term of the Project:

   i. Repair, replace and cure all faults to ensure all reported and/ or identified defective and/ or non-glowing lamps are brought back to acceptable working conditions, meeting the criteria specified in the Technical Specifications. This shall be accomplished within a period of Twenty-four (24) hours.

b. The Concessionaire shall, at its own cost & expense, put in place adequate measurement, communication and software systems for being able to appropriately record and generate reports from the CCMS on its performance on the above KPIs on a daily, weekly, monthly and annual basis.

c. Additionally, the Concessionaire shall, record and maintain the energy consumption, power outage, hour wise number of estimated functional Luminaires, % uptime etc. based on the reports generated from the CCMS on a daily basis from the readings received from the individual street light controller equipment installed at each switching point/feeder panel.

d. For calculation of non-working lamp hours, the hours/ duration of power outage from the source end of the responsible power distribution licensee shall be duly adjusted from the total number of applicable lamp-hours for any given day, week, month and year. Such power outages as recorded in the metering equipment installed at the switching point/ feeder panel level only shall be considered for the purpose of calculation of non-working lamp hours due to power outage.

e. For the purpose of measurement of performance on the KPI for rectification of defective/ non- glowing lamps, the Concessionaire shall put in place adequate systems and processes for recording complaints and identification of non-glowing lamps including the following sources:

i. Predictive identification of defective/ non-glowing lamps based on loading analysis at feeder panel level through software systems installed at CCMS;

ii. Complaints on non-glowing/ defective lamps as lodged by citizens/ general public;

iii. Any non-glowing/ defective lamp identified and reported by any official of the Authority;

iv. Defective/ non-glowing/Partial glowing/Flickering lamps as reported by Authority based on Lux Level and Illumination Ratio measurements, in accordance with terms of the SCHEDULE 8: Post Project COD lux level & illumination ratio monitoring schedule ; and

v. Any other source that reports/ records existence of such non-glowing/ defective lamps to the Concessionaire/ CCMS/ Call Centre.

9. Reporting formats (minimum requirement)

Daily Non-Functional Points Report Date:

Feeder Panel No./ Name	Total Number of Luminaires as on Date (EOD)	Total Number of Non-Functional Luminaires as on previous day (EOD)	Total Number of Non-Functional Luminaires as on date (EOD)	Number of Non-Functional Luminaires for the day	Action Taken	Remarks

On the basis of above, the Concessionaire shall submit Monthly Compliance Report to the Authority in the following formats along with the invoice to be submitted.

Feeder Panel No./ Name	% non-functional lamp hours for a Feeder Panel	Remarks

% non − functional lamp hours = for a Feeder Panel (Non-Functional Lamp hours / Total No. of hours x No. of fixtures)

SCHEDULE - 6 LIQUIDATED DAMAGES

i. Subject to Article 13.1, in the event the Concessionaire fails to achieve the set Project COD for reasons other than those set out in Article 13.1, it shall pay liquidated damages (Delay Liquidated Damages) to the Authority as per the following in accordance with the clause 13.3 of this agreement.

ii. Delay Liquidated Damages

- The Project COD is to be achieved within 8 months from the Effective Date as per the milestones below –
    - **Milestone 1** – Installation of minimum 50% of LED Streetlights and corresponding CCMS panels in the first 4 months.
    - **Milestone 2 –** Remaining 50% of work in the rest 4 months
- An extension not exceeding a maximum of 10 (ten) months from the Effective Date can be granted by the Authority in consultation with the ICE and with the levying of liquidated damages as shown in table below, permissible up to maximum value of 10% of the Total Project Cost.

Milestone	**Period**	**Reference Document**	**L.D**
Milestone 1	4 months from Effective date	Approved EIP (Equipment Installation and Manpower Deployment Plan)	(50% of the agreed capital cost)* (0.1 %) * (delay in days).
Milestone 2	4 months	Approved EIP (Equipment Installation and Manpower Deployment Plan)	(Agreed project cost) * (0.1 %) * (delay in days).

- Any delay beyond 10 months from the Effective Date, shall be treated as "Concessionaire Event of Default" and the Authority shall have the right to terminate the Agreement and en-cash the Performance Security.

ANNEX – 1 FORMAT OF THE ESCROW AGREEMENT

(To be executed on appropriate stamp paper of appropriate value)

THIS ESCROW AGREEMENT (**this Escrow Agreement**) is entered into on [●] [2024] by and among: **[Chief Commissioner], Bruhat Bengaluru Mahanagara Palike**, with its principal office at Narasimhraja Square, Bengaluru, Karnataka 560002 (hereinafter referred to as the Authority , which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns);

i. [Name of the CONCESSIONAIRE], with its registered office at [●] (hereinafter referred to as the CONCESSIONAIRE, which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns); and

ii. [●], a bank duly constituted in accordance with the laws of India and carrying on the business of banking in India as a scheduled commercial bank, with its registered office at [●] and acting for the purposes of this Escrow Agreement through its branch office at [●] (hereinafter referred to as **Escrow Agent**, which expression shall unless repugnant to the context or meaning thereof includes its successors and permitted assigns).

The Authority, the Concessionaire and the Escrow Agent are referred to herein collectively as **Parties** and individually as **Party**.

WHEREAS:

A. The Authority and the Concessionaire executed the Supply, Installation, Operation and Maintenance Agreement on [●] (Agreement) for developing an energy efficient public street lighting system in the Project.

B. As per the provisions of the Agreement, the Authority and the Concessionaire are required to appoint an Escrow Agent and open an escrow account with such agent for making periodical payments to the Concessionaire for implementing the Project.

C. The Escrow Account shall be funded by the Authority in accordance with the terms of this Escrow Agreement and such account shall serve to secure the Authority's payment obligations towards the Concessionaire under the Agreement.

D. The Escrow Agent is willing to serve as an escrow agent in accordance with the terms and conditions of this Escrow Agreement.

NOW, THEREFORE, the Parties hereto agree as follows:

1. ESCROW ACCOUNT

1.1. **Appointment:** The Authority and the Concessionaire hereby appoint the Escrow Agent to serve as the escrow agent for the purposes of this Escrow Agreement and the Escrow Agent hereby accepts this appointment.

1.2. **Escrow Account:** Within 5 Business Days of the date hereof, the Authority and the Escrow Agent

shall establish an escrow bank account denominated in Indian Rupees for the benefit of the Concessionaire (the Escrow Account).

1.3. Deposit and Payment

1.3.1. The Authority shall at all times during the Term, fund the Escrow Account with an amount equivalent to EMI Fee for 3 Months in relation to the Project streetlights. (Collectively referred to as Escrow Amount).

1.3.2. Within 10 Days of issue of LEDs /Equipment Commissioning Certificate and the Concessionaire issuing the Payment Statement to the Authority, whichever is later, in respect of installation of LED Lights, the Authority shall issue written instructions to the Escrow Agent Payment to the Concessionaire for the Equipment Installed. Within 1 Business Day of receipt of such written instructions, the Escrow Agent shall release the amount mentioned therein to the Concessionaire; and

1.3.3. Within 3 Business Days from the receipt of a monthly Payment Statement, the Authority shall issue written instructions to the Escrow Agent to release 75% of the EMI Fee Payment to the Concessionaire for the relevant month. Within 1 Business Day of receipt of such written instructions, the Escrow Agent shall release the amount mentioned therein to the Concessionaire.

1.3.4. Subject to Article 1.3.5, the Authority shall, within 10 days from the acceptance of a monthly Payment Statement, issue written instructions to the Escrow Agent to release the balance 25% of the EMI Fee Payment to the Concessionaire for the relevant month. Within 1 Business Day of receipt of such written instructions, the Escrow Agent shall release the amount mentioned therein to the Concessionaire.

1.3.5. If the Authority wishes to exercise its right to set-off any amount due to the Concessionaire against any amounts due and payable from the Concessionaire to the Authority from the remaining 25%, it shall issue written instructions accordingly to the Escrow Agent.

1.4. Identification and Separation

The Escrow Agent shall clearly identify in its records the Escrow Account as an escrow account and shall keep the funds standing to the credit of the Escrow Account separated and segregated from the Escrow Agent's own funds or funds of any of its other customers or third parties.

1.5. Fees

1.5.1. The Concessionaire shall pay [Rs. [●] per annum] as fees to the Escrow Agent for the establishment and management of the Escrow Account. The Concessionaire shall pay such fees to the Escrow Agent within 10 Business Days of receipt of an invoice from the Escrow Agent.

1.5.2. Any payment made by the Authority under this Escrow Agreement shall be made from the following account or from such other account which the Authority may designate from time to time:

Bank:

Account number: BIC (SWIFT):

Address of Bank:

1.6. Escrow Account Statements

1.6.1. The Escrow Agent shall provide monthly statements regarding the Escrow Account to the Authority and the Concessionaire.

1.7. ESCROW AMOUNT

1.7.1. Promptly upon the Escrow Amount being transferred to the Escrow Account, the Escrow Agent shall send to the Authority and the Concessionaire a notice informing them of the transfer.

a. The Escrow Agent shall hold the Escrow Amount in escrow for the sole benefit of the Concessionaire. The Escrow Agent shall not release any of the Escrow Amount to any person other than the Concessionaire. In particular, the Escrow Agent shall not accept any requests for withdrawals or transfers of the Escrow Amount from the Authority for the benefit of the Authority or any third party, unless it is made in accordance with this Escrow Agreement

b. The Escrow Agent shall not apply any right of set-off against the Escrow Amount, grant any lien over the Escrow Amount, or apply any fee or deduction in relation to the Escrow Amount.

1.8. Expiry

Upon the Transfer Date, the Authority shall send instructions to the Escrow Agent requesting it to release and transfer any due and payable amounts to the Concessionaire and any remaining amounts to be transferred to the Authority

2. OBLIGATIONS OF THE ESCROW AGENT

2.1. The obligations of the Escrow Agent under this Escrow Agreement are subject to the following terms:

a. the duties of the Escrow Agent are only as herein specifically provided, and are purely administrative in nature. Unless expressly provided in the Escrow Agreement, the Escrow Agent shall neither be liable for, nor chargeable with knowledge of, the terms and conditions of any other agreement, instrument or document in connection herewith, including, without limitation, the Agreement, and shall be required to act in respect of the Escrow Amount only as provided in this Escrow Agreement. This Escrow Agreement sets forth all the obligations of the Escrow Agent with respect to any and all matters pertinent to the Escrow Account contemplated hereunder and no additional obligations of the Escrow Agent shall be implied from the terms of any other agreement. The Escrow Agent shall incur no liability in connection with the discharge of its obligations under this Escrow Agreement or in connection therewith, except such liability as may arise from the Escrow Agent's negligence, willful misconduct or otherwise from any breach of this Escrow Agreement. Such liability, however, shall not exceed the amount of the Escrow Amount outstanding at the date of the said breach by the Escrow Agent;

b. the Escrow Agent shall not be required to perform any acts which will violate any Applicable Laws; and

c. in the event of any bankruptcy proceedings or enforcement proceedings against any of the Parties pursuant to applicable laws or regulations, the Escrow Agent shall, notwithstanding the provisions of this Escrow Agreement, act and perform in accordance with Applicable Laws.

3. REPRESENTATIONS AND WARRANTIES

Each Party represents and warrants that, as of the date hereof and in the foreseeable future:

a. it has the authority to enter into this Escrow Agreement;

b. this Escrow Agreement constitutes a legally valid and binding obligation, enforceable against it in accordance with its terms;

c. its entry into and/or performance under this Escrow Agreement will not be in breach of any express or implied terms of any contract with or other obligation to any third party; and

d. it is solvent and able to perform all of its obligations under this Escrow Agreement.

4. MISCELLANEOUS

4.1. Definitions

Unless otherwise defined herein, all capitalized terms shall have the meaning ascribed to them in the Agreement.

4.2. Notices

Any notice or other communication to be given or made under this Escrow Agreement to the Parties shall be in writing. Except as otherwise provided in this Escrow Agreement, such notice, request or other communication shall be delivered by registered mail or facsimile to the Party(ies) at the following addresses:

Authority: [•]

CONCESSIONAIRE: [•]

Escrow Agent: [•]

4.3. Entire Agreement

This Escrow Agreement constitutes the entire agreement and understanding between the Parties with respect to its subject matter (i.e. escrow arrangement) and replaces and supersedes all prior agreements, arrangements, undertakings or statements regarding such subject matter.

4.4. Amendments

No variation of or amendment to this Escrow Agreement shall be effective unless made in writing and executed by all the Parties hereto.

4.5. Assignment

Neither this Escrow Agreement nor any of the rights or obligations hereunder may be assigned by a Party without the prior written consent of the other Parties.

4.6. Severability

Whenever possible, each provision of this Escrow Agreement shall be interpreted in such a way as to be effective and valid under law, but if any provision of this Escrow Agreement is unenforceable or invalid under law, such provision shall be ineffective only to the extent of such unenforceability or invalidity, and the remaining provisions of this Escrow Agreement shall continue to be binding and in full force and effect.

4.7. Confidentiality

Unless otherwise determined by a competent jurisdiction, the Parties, their employees, representatives and agents shall keep the provisions of this Escrow Agreement strictly confidential and, except as may be required by Applicable Laws, shall make no disclosure thereof to any person, except the Parties' respective legal counsel and professional advisers, without the prior written consent of the other Parties.

4.8. Termination

This Escrow Agreement shall be automatically terminated upon the expiry of the Term of the Agreement. It may also be terminated earlier if the Authority and Concessionaire agree to terminate the Escrow Agreement and send a termination notice to the Escrow Agent.

4.9.

4.10. Dispute Resolution Mechanism

a. This Escrow Agreement shall be governed by and construed in accordance with the laws of India.

b. If any dispute arises out of or in connection with this Escrow Agreement, this dispute shall not affect the Parties' duty to continue the performance of all of their non-disputed obligations.

c. If any dispute arises, either Party shall give notice to the other Parties of the same, whereupon the Parties shall meet promptly and in a good faith to attempt to reach an amicable settlement accordance with the Dispute resolution procedure set forth in Clause 21.

d. All disputes not settled amicably pursuant to clause 6.9.c above shall be heard by the Civil Courts of Bengaluru District.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE SET THEIR HANDS AND SEAL TO THESE PRESENTS ON THE DAY, MONTH & YEAR FIRST ABOVE WRITTEN IN PRESENCE OF THE FOLLOWING WITNESSES:

SIGNED, SEALED & DELIVERED

FOR AND ON BEHALF OF THE Authority

(Authorized Signatory)

FOR AND ON BEHALF OF THE CONCESSIONAIRE

(Authorized Signatory)

Witnesses:

1.

2.

ANNEX – 2 FORMAT OF THE PERFORMANCE BANK GUARANTEE

Bank Guarantee No. [●]

THIS DEED OF GUARANTEE is executed on this [insert date] day of [insert month and 2024 at [insert place] by [insert name of bank] having its head/registered office at [insert address], (**hereinafter referred to as the "Guarantor**", which expression shall unless repugnant to the subject or context thereof include its successors, assigns and permitted substitutes);

IN FAVOUR OF:

Chief commissioner,**Bruhat Bengaluru Mahanagara Palike**, with its principal office at Bengaluru, (hereinafter referred to as the Authority, which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns).

WHEREAS

A. The Authority has entered into a Supply, Installation, Operation and Maintenance Agreement dated [insert date] (**the "Agreement"**) with [Name of the Concessionaire], with its registered office at [Registered office address] (hereinafter referred to as the Concessionaire, which expression shall unless repugnant to the context or meaning thereof includes its successors and permitted assigns).

B. In terms of clause 9 of the Agreement, the Concessionaire is required to furnish to the Authority, an unconditional, irrevocable, on demand bank guarantee for an amount of INR …… as security for due performance of its obligations under the Agreement during the commencing from the date of this guarantee until the Transfer Date (**Guarantee Term**), including any amounts due and payable by it to Delay Liquidated Damages or penalties that it is liable to pay under the Agreement.

C. At the request of the Concessionaire and for sufficient consideration, the Guarantor has agreed to provide an unconditional, irrevocable and on-demand bank guarantee for the due and punctual performance/discharge by the Concessionaire of its obligations under the Agreement during the Term, including any Delay Liquidated Damages or penalties that the Concessionaire is liable to pay under the Agreement.

NOW THEREFORE THIS DEED WITNESSETH AS FOLLOWS:

1. Capitalized terms used herein but not defined shall have the meaning ascribed to them in the Agreement.

2. The Guarantor hereby irrevocably and unconditionally guarantees and secures, as primary obligor and not merely as guarantor, to the Authority, the payment in full of all amounts at any time that may be due, owing or payable to the Authority from the Concessionaire for the failure of the Concessionaire to duly and punctually perform all of its obligations under the Agreement during the Guarantee Term ("Guarantee"), without any demur, reservation, protest or recourse, immediately on receipt of a demand from the Authority.

The Guarantee is given on consideration received from the Concessionaire (the receipt and

sufficiency of which is hereby acknowledged).

The Guarantor agrees that the value of the Guarantee shall at all times be maintained at the amount of INR …….. ("Guaranteed Amount").

The Guarantor further agrees that this Guarantee does not limit the number of claims that may be made by the Authority against the Guarantor. Upon a payment being made under this Guarantee, the amount of the Guarantee shall automatically be replenished to the full Guaranteed Amount.

Any payment made hereunder shall be made free and clear of and without deduction for, or on account of, any present or future Taxes, deductions or withholdings of any nature whatsoever and by whomsoever imposed, and where any withholding on a payment is required by any Applicable Law, the Guarantor shall comply with such withholding obligations and shall pay such additional amount in respect of such payment such that the Authority receives the full amount due hereunder as if no such withholding had occurred.

3. The Guarantor shall not go into the veracity of any breach or failure on the part of the Concessionaire or validity of demand so made by the Authority and shall pay the amount specified in the demand notwithstanding any direction to the contrary given or any dispute whatsoever raised by the Concessionaire or any other Person. The Guarantor's obligations hereunder shall subsist until all such demands are duly met and discharged in accordance with the provision hereof.

4. The obligations of the Guarantor herein are absolute and unconditional, irrespective of the value, genuineness, validity, regularity or enforceability of the Agreement or the insolvency, bankruptcy, re-organization, dissolution or liquidation of the Concessionaire or any change in ownership of the Concessionaire or any purported assignment by the Concessionaire any other circumstance whatsoever which might otherwise constitute a discharge or defence of a guarantor or a surety.

   Further, this Guarantee is in no way conditional upon any requirement that the Authority shall first attempt to procure the Guaranteed Amount from the Concessionaire or any other Person, or resort to any other means of obtaining payment of the Guaranteed Amount.

5. In order to give effect to this Guarantee, the Authority shall be entitled to treat the Guarantor as the principal debtor. The obligations of the Guarantor under this Guarantee shall not be affected by any act, omission, matter or thing which, but for this provision, would reduce, release or prejudice the Guarantor from any of the Guaranteed Amount or prejudice or diminish the Guaranteed Amount in whole or in part, including, whether or not known to it, or to the Authority:

   a. any time or waiver granted to, or composition with, the Concessionaire or any other Person;

   b. any incapacity or lack of powers, authority or legal personality of or dissolutions or change in the status of the Concessionaire or any other Person;

   c. any variation of the Agreement so that references to the Agreement in this Guarantee shall include each variation;

d. any unenforceability, illegality or invalidity of any obligation of any Person under the Agreement or any unenforceability, illegality or invalidity of the obligations of the Guarantor under this Guarantee or the unenforceability, illegality or invalidity of the obligations of any Person under any other document or Guarantee, to the extent that each obligation under this Guarantee shall remain in full force as a separate, continuing and primary obligation, and its obligations be construed accordingly, as if there were no unenforceability, illegality or invalidity;

e. the partial or entire release of any Guarantor or other Person primarily or secondarily liable or responsible for the performance, payment or observance of any of the Concessionaire's obligations during the Term; or by any extension, waiver, or amendment whatsoever which may release a guarantor or Guarantor, other than performance or indefeasible payment of a Guaranteed Amount; or

f. any part performance of the Agreement by the Concessionaire or by any failure by the Authority to timely pay or perform any of its obligations under the Agreement.

6. If, and to the extent that for any reason the Concessionaire enters or threatens to enter into any proceedings in bankruptcy or re-organisation or otherwise, or if, for any other reason whatsoever, the performance or payment by the Concessionaire of the Guaranteed Amount becomes or may reasonably be expected to become impossible, then the Guaranteed Amount shall be promptly paid by the Guarantor to the Authority on demand.

7. So long as any amount is due from the Concessionaire to the Authority, the Guarantor shall not exercise any right of subrogation or any other rights of a guarantor or enforce any guarantee or other right or claim against the Concessionaire, whether in respect of its liability under this Guarantee or otherwise, or claim in the insolvency or liquidation of the Concessionaire or any such other Person in competition with the Authority. If the Guarantor receives any payment or benefit in breach of this Clause 7, it shall hold the same upon trust for the Authority.

   This Guarantee shall remain in full force and effect from the date hereof until the Transfer Date.

8. Notwithstanding the foregoing, this Guarantee shall continue in effect until the sums payable under this Guarantee have been indefeasibly paid in full and the Guarantor receives written notice thereof from the Authority, such notice to be issued promptly upon such occurrence.

9. The Guarantor represents and warrants to the Authority that:

   a. it has the power to execute, deliver and perform the terms and provisions of this Guarantee and has taken all necessary action to authorise the execution, delivery and performance by it of this Guarantee;

   b. the Guarantor has duly executed and delivered this Guarantee, and this Guarantee constitutes its legal, valid and binding obligation enforceable in accordance with its terms except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, moratorium or other similar laws affecting the enforcement of creditors' rights generally and by general equitable principles;

   c. neither the execution, delivery or performance by the Guarantor of this Guarantee, nor

compliance by it with the terms and provisions hereof will: (i) contravene any material provision of any Applicable Law; (ii) conflict or be inconsistent with or result in any breach of any of the material terms, covenants, conditions or provisions of, or constitute a default under any agreement, contract or instrument to which the Guarantor is a party of by which it or any of its property or assets is bound; or (iii) violate any provision of the Guarantor's constituent documents

d. no order, consent, approval, license, authorisation or validation of, or filing, recording or registration with, except as have been obtained or made prior to the date hereof, or exemption by, any governmental or public body or authority, or any subdivision thereof, is required to authorise, or is required in connection with: (i) the execution, delivery and performance of this Guarantee; or (ii) the legality, validity, binding effect or enforceability of this Guarantee; and

e. this Guarantee will be enforceable when presented for payment to the Guarantor's branch in _____.

10. This Guarantee is a continuing one and all liabilities to which it applies or may apply under the terms hereof shall be conclusively presumed to have been created in reliance hereon. No failure or delay on the part of the Authority in exercising any right, power or privilege hereunder and no course of dealing between the Authority and the Guarantor, or the Concessionaire, shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

11. The rights, powers and remedies expressly provided in this Guarantee are cumulative and not exclusive of any rights, powers or remedies which the Authority would otherwise have. No notice to or demand on the Guarantor in any case shall entitle the Guarantor to any other further notice or demand in similar or other circumstances or constitute a waiver of the rights of the Authority to any other or further action in any circumstances without notice or demand.

12. If any one or more of the provisions contained in this Guarantee are or become invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby, and the Guarantor shall enter into good faith negotiations with the Authority to replace the invalid, illegal or unenforceable provision.

13. The Guarantor hereby agrees to execute and deliver all such instruments and take all such actions as may be necessary to make effective fully the purposes of this Guarantee.

14. This Guarantee may be executed in one or more duplicate counterparts, and when executed and delivered by the Guarantor and the Authority shall constitute a single binding agreement.

15. The Authority may assign or transfer all or any part of its interest herein to any other person with prior written notice to the Guarantor. The Guarantor shall not assign or transfer any of its rights or obligations under this Guarantee.

16. All documents arising out of or in connection with this Guarantee shall be served:

a. upon the Authority, office at _____ ; and

b. upon the Guarantor, at [insert address].

17. Any demand, notice or communication would have been deemed to have been duly served:

    a. if delivered by hand, when left at the proper address of services; and

    b. if given or made by pre-paid registered post or facsimile, when received.

18. Either party may change the above address by prior written notice to the other party.

19. This Guarantee shall be governed by, and construed in accordance with, the laws of India. The Guarantor irrevocably agrees that any dispute arising out of or relating to this Guarantee will be adjudicated in accordance with the provision of the Arbitration and Conciliation Act, 1996.

    IN WITNESS WHEREOF the Guarantor has set its hands hereunto on the Day, Month and year first hereinabove written.

    Signed and delivered by [insert name of Bank] Bank by hand

    Of Mr. [insert name of signatory]

    its [insert designation] and duly authorized representative

    authorized by [Power of Attorney dated [insert date]] OR [Board resolution dated [insert date]].

ANNEX – 3 FORMAT OF THE VESTING CERTIFICATE

With respect to the Supply, Installation, Operation and Maintenance Agreement dated [•] executed between Chief Commissioner, BRUHAT BENGALURU MAHANAGARA PALIKE (Authority) and [Insert name of the CONCESSIONAIRE] (the CONCESSIONAIRE) for the implementation of energy efficient public lighting system in _____ hereby acknowledges:

a. compliance and fulfilment by the Concessionaire of its obligations set out in clause 23.2;

b. receipt of actual possession of the Project from the Concessionaire; and

c. receipt from the Concessionaire of a certificate confirming that there are no liens or encumbrances whatsoever on the Project,

on the basis that upon the issue of this Vesting Certificate, the Authority shall be deemed to have acquired, and all title and interest of the Concessionaire in or about the Project shall be deemed to have vested, unto the Authority free from all Encumbrances.

Notwithstanding anything to the contrary contained hereinabove it shall be a condition of this Vesting Certificate that in the event of any defect or efficiency in any of the transfer requirements set forth in Clause 24.2 of the Agreement being found or discovered at any time hereafter, nothing contained in this Vesting Certificate shall be construed or interpreted as waiving the obligation of the Concessionaire to rectify and remedy the same and/or relieving the Concessionaire in any manner of the same.

Agreed and accepted

For the Concessionaire	For the Authority
By: Name Title: Dated:	By: Name Title: Dated:

ANNEX - 4 FORMAT OF THE PAYMENT STATEMENT

(To be issued by the Concessionaire on its letterhead)

From [Name of the Authorized Signatory] [insert designation] [Name of Project SPV] [Address of CONCESSIONAIRE]	Date: [insert date]

To Chief
Commissioner,
Bruhat Bengaluru Mahanagara Palike

Sr. No.	Payment Particular	Amount (INR)	
1.	EMI Fee Payment		
	Total		

Yours faithfully,

(Signature, name and designation of the Authorized Signatory)

Dated this [insert date] day of [insert month] 2021

Seal of the Concessionaire Place: